UNIVERSITÀ DI PISA

FACOLTÀ DI INGEGNERIA

RELAZIONE PER IL CONSEGUIMENTO DELLA LAUREA IN INGEGNERIA GESTIONALE

Gestione della documentazione in un progetto di costruzione di una centrale elettrica a ciclo combinato cogenerativo.

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Abstract.

The thesis deals with the management and control of communication and documentation in a construction project of a combined cycle cogeneration power plant. The work was made during my six months of internship at ALSTOM Switzerland and had the objective of maintaining the control of documentation and communication, both formal and informal, at the level of design and project management, with the aim of ensure the efficient perform of activities. In addition to the objective of improving the efficiency of management of project activities, my work has had the target of ensuring control of the exchange of documentation, in terms of timing and delivery dates, to support the project team in the Claim Management.
The second target of my job was to write a Communication Management Plan to clarify to the project team the communication procedures and to support the project with an adequate exchange of information.

Abstract.

L'elaborato tratta la gestione ed il controllo della comunicazione e della documentazione in un progetto di costruzione di costruzione di una centrale elettrica a ciclo combinato cogenerativo. Il lavoro è stato svolto durante i mie sei mesi di stage ad ALSTOM Svizzera e ha avuto l'obiettivo di mantenere il controllo della documentazione e della comunicazione, sia formale che informale, al livello della progettazione e della gestione di progetto, con lo scopo di garantire un'efficiente svolgimento delle attività nel rispetto dei tempi prefissati. Oltre all'obiettivo di migliorare l'efficienza di gestione e svolgimento delle attività progettuali, il mio lavoro ha avuto l'obiettivo di garantire un controllo dello scambio documentale, in termini di tempi e date di consegna, in modo tale da supportare il team di progetto nel Claim Management.
Il secondo obiettivo del mio lavoro è stato scrivere un Communication Management Plan in modo tale da chiarificare al team di progetto le procedure di comunicazione e di supportare il progetto con un adeguato scambio informativo.

1. Introduction.

What is Communication in Project Management?

The word "communication" is coming from the Latin word " "Communis" and it means to share and to join something. The reference to the community, present in the Latin word, is realized by the sharing, and, indeed, through the information sharing it is possible to communicate. Communication is a process that allows organisms to exchange information by several methods. Exchange requires feedback. The word communication is also used in the context where little or no feedback is expected such as broadcasting, or where the feedback may be delayed as the sender or receiver use different methods, technologies, timing and means for feedback.

Communication can be defined as "the transfer of meanings between persons and groups"

However, when we speak about Communication in Project Management we do not only mean the simple exchange of information regarding the project, however we mean also the documentation management, the knowledge management, the lesson learned management, the communication techniques, the data management. A good definition of project communication management can be: "Project Communications Management includes the process required to ensure timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project information" (Project management institute standards committee, 1996, p103). The Project Communication Management processes provide the critical links among people and information that are necessary for successful communications. Everyone involved in the project should understand how communication affects the project as a whole.

Communication, definitely, is a complex and critical part of the project and the lack of communication creates problems of misalignment and misunderstanding between the different stakeholders. Therefore, it is always more important and essential, in a project, the position of the Communication Manager. The main activities that should be performed by the Communication Manager can be: the

definition and classification of the stakeholders and their needs of information, the definition of the Communication Plan and the documentation management. More specific, the communication management is the systematic planning, implementing, monitoring, and revisioning of all the channels of communication within an organization, and between organizations; it also includes the organization and dissemination of new communication directives. Other aspects of communications management include designing internal and external communications directives, and managing the flow of information, including online communication.

In typical projects, people spend a lot of time planning, organizing, doing and fixing but often pay little heed to communication. As a result, the communication, such as it is, may be inadequate, of poor quality, or unidirectional. In project management there are two essential ingredients: people and the effective exchange of ideas. Without people nothing gets done and without communication nobody knows what to do. After all, the very nature of a project is that it has not been done before. Communication is like engine oil: it needs to be applied to the machinery or the machinery will not start or, if it does, it will quickly falter and grind to a halt. And the oil, like communication, needs to be continuously recycled and regularly replaced with new oil as the old becomes no longer usable. But what about the quality of the oil? Too little or too thin and it is not effective; too thick or too much and everything just gets gummed up. It's the same with communication, yet, how much attention do we pay to the 'quality' of our project communication? Usually not enough, however is becoming always more important the position of the Communication Manager and, with him, the Communication.

Which are the characteristics of the Communication?

To communicate are necessary at least one sender and one receiver. The way of communication between sender and receiver is influenced by their culture, their interests, their way of living, their nationality and by many other factors. All those factors could make communication difficult.

Indeed, when we send a message, vocal or written or in another way, we make a codification of it, based on our personality and on our way of seeing the word

and thinks around us. The codification is the process through which the sender transforms his ideas in symbols or words with the attempt to be understood by the others.
This codification is the first difficulty that we find in communication, because the receiver may has not the same approach of decoding the message.
For this reason, the communication must be clear, effective, complete but not redundant. A long and unstructured message is not useful because the receiver has to look for the information he needs, loosing time and "money". In this regard it is significant Shakespeare sentence "Brevity is the soul of wit".
Consequently, my work will focalize on the main target, explained at page 17, and will follow all the significant communication rules.

I wrote this Final Work during my six months internship in ALSTOM Switzerland in Baden.
I worked in the Project Management Department and I have been assigned to the Macedonian Project of a combined cycle cogeneration Power Plant in Skopje (See the description of the project at page 9).
I was assigned to the position of Documentation Manager for the Skopje Project. The main target I had, was the managing and controlling of communication and documentation exchanges in ALSTOM and between ALSTOM's Partner and Client and to create and maintain an Action List. I had to write a Project Communication Plan (attached) and I had to manage all the documentation produced by the project as e-mail, letters, technical and commercial documents. In this regard, my task has been to create and manage a system to catalog, to store, to find and to provide all the information of the project.
A second task, but no less important, was to make sure that our team was informed of what they should do; in this regard I used an Action List.

My work in ALSTOM was characterized by a continuous improvement of the communication and documentation management and in this regard, as you will observe, it started from a simple but not very comfortable way of maintaining

the communication control till the introduction of two functional Information Systems.

In this regards, my work can be also seen as a process of "Operative Communication Change Management" because to rich my targets I had to try to change the way of working of the project team regarding the communication rules.

At the beginning I created I simple system to maintain the correspondence control with an Excel file; in this manner, since the beginning of my internships I have been able to help the project team with the correspondence and documentation control. In this way I understood and studied the problems regarding communication and documentation management and after a while I got a more clear idea of what the team was expecting from me.

In a second moment, to improve the documentation and communication control I started to use the informative systems, PIRS, used in ALSTOM, to maintain the control and to improve the information channels.

In the mean time, as said, I created and maintained an Action list in Excel; in this list there were written all the internal and external open actions connected to the correspondence exchange. The Action list was used during the weekly meeting to check the progress done within the week. It gave a strong improvement to the weekly meeting management.

I had the training to use PLAN –PDM, the information system used in ALSTOM for the Documentation Management, to see and study how would be possible to utilize it in the Skopje Project. When I joined the project, first of October 2007, this system was not in used for many reasons. Therefore, it was asked to me, to see how could we introduce the informative System to improve the documentation control and to align with ALSTOM policy.

My work is held in four main stages:

1). In the first stage I had to be aware of the actual situation of the project, to learn the contract and to understand what the team was expecting from me. The project started on 11.06.07 and I joined the team four months later. I had to

get on track and I had to learn the "Tools" used for the documentation and communication management. In this stage I constructed an easy system for the documentation and communication management and an Action List to make sure everyone new what to do and when. Additional I had to get an idea of Power Plant business. At this stage I wrote a preliminary Communication Plan.

2). In the second stage I started a process of standardization of internal and external communication. I wrote a Communication Plan and it was decided to open a new communication channel to speed-up the communication process between parties. I started also a reorganization of the project database under PIRS.

3). In the third stage I implemented the communication control in PIRS (Information system used in ALSTOM) for some of the communication channels. In particular it was not possible to implement it for the engineering communication channel between ALSTOM and his Partner (GAMA) for lack of standardization of our partner correspondence.

4). In the fourth stage I introduced the PLANT-PDM information system for the exchange of documents after doing a feasibility study. At this stage, as the documentation control was almost automatic I used my time creating an efficient documentation system to help the Claim Management. In this regard, I built dedicated documents regarding particular issues for the Claim Management in PIRS.

2. Description of the Project.

ALSTOM Switzerland got a contract to construct a combined cycle cogeneration Power Plant of 220MW in Skopje (Macedonia) together with one consortium-leading partner GAMA (EPC contract). GAMA is a Turkish company, resident in ANKARA, who is in charge of the 65% of the contract value. ALSTOM

Switzerland has the remaining 35% of the contract value. The Client is TE-TO, an 80% Russian and 20% Macedonian Joint Venture. The project started on 31.06.07 and has duration of 27 months. The contract price is around 140 Million Euros. ALSTOM Switzerland scope is to supply a Gas Turbine Package (Model GT13E2 of 172.1 MW power output and an efficiency of 36.4% in simple cycle and an efficiency of 53.1% in combined cycle) and a Steam Turbine Package (Model ST 8CK76). ALSTOM France is ALSTOM Switzerland sub supplier of the generator (type 50WX 18XZ-059-15KV-50Hz) of the Steam Turbine.

2.1. Break down of ALSTOM scope of supply

ALSTOM Switzerland was assigned to purchase a Gas Turbine and its Generator, a Steam Turbine and its Generator and the Auxiliary Systems.

ALSTOM Switzerland decided to purchase the Steam Turbine from ALSTOM Poland and the steam turbine generator from ALSTOM France.

2.1.1. ALSTOM Switzerland scope of supply:

- Thermal Block total incl. FDS
- Air Cooled Generator GG423
- Air intake manifold with on/off-line cleaning
- Equalizing section
- Thermal Insulation for EGD 1 and equalizing section
- Exhaust gas diffuser 1 with NOX measuring device
- Blow off silencer
- Blow off valves
- Anti Icing Valve
- Fuel Gas Filter Skid w.Flowmeter
- Control valve block
- Control Air Unit
- Air Intake System (GT, outdoor)
- GT auxiliaries block (for open cooling circuit)
- GT foundation anchors and plates
- Sikadur

- GT erection material
- GT commissioning material
- GT special tools and devices
- Wash Cart / skid
- Lube Oil Purifier
- Fire Fighting System GT
- Gas Detection System GT
- CLTD
- MP/LP Piping 50 Hz
- Insulation for Piping
- Platforms and ladders
- Enclosure outdoor GT13E2
- Fire rated seals
- Egatrol Control System
- GT Control Cables
- Low Voltage Switchgear
- DC/ UPS
- Synchronization, Measuring, Metering
- Generator Protection
- Generator Circuit Breaker
- Neutral Point Cubicle
- SSD & Geno Exitation Coltrol
- Generator Exitation & Voltage Control
- Electrical Modules
- Modules Shop Assembly

2.1.2. ALSTOM Poland scope of supply.

The sub supplier of the Stem Turbine, as said, is ALSTOM Poland (Called TSR) and his scope of supply is the Steam turbine and the auxiliary system package:

Scope of delivery:

- Steam turbine with live and secondary steam admission systems,

- Condenser and DH exchanger (DHEX), with upstream steam pipelines to turbine
  and condensate pumps
- Bypass systems for both steams,
- Turbine protection and control system (based on ABB AC 800 Controller)
- Turbine exhaust cooling system
- Turbine thermal insulation
- Gland steam system
- Drain system
- Lube and jacking oil system
- Engineering, O&M, Erection, Commissioning documentation

Scope of services

- Personnel training

2.1.3. ALSTOM France scope of supply.

ALSTOM France (Called TEN) scope of supply is a steam turbine Generator (type 50WX 18XZ-059-15KV-50Hz). See below their scope of supply:

Scope of delivery

- One generator type 50WX 18XZ-059-15KV-50Hz
- One bearing pedestal NDE
- Four coolers
- One noise hood
- One rotor removal device (using local crane)
- Spare part for the warranty period

The engineering work of our partner is made by an engineering consulting company H&D. The Client, to supervise the Consortium work, hired a Swiss Consulting Company, Colenco. Definitely, there are many stakeholders with direct interest into the project and an efficient communication network between them is essential.

The combined cycle cogeneration Power Plant is constructed in Skopje, the capitol city of Macedonia.

Find below photos of the site location and the site area:

2.2. Description of the Project Team.

The project leader of Skopje combined cycle cogeneration Power Plant is The Project Director (PD). He has the complete responsibility of the project and he is dedicated on the project. The Project Engineering Manager (PEM), who takes care of the technical part of the project, leads the engineering team. He has the responsibility of the technical success of the project and spends 80% of his working time on the Skopje Project. A mechanical leading engineer, who leads the mechanical team, an electrical leading engineer, who leads the electrical team and a civil leading engineer, who leads the civil team, compose the engineering team. No one of these leading engineers is dedicated full time on the project; most of them are assigned to three or four different projects. They make part of the team also, a quality manager, a planning manager, a contract manager, a financial controller, a purchasing manager, a transport manager, a commissioning manager, a erection supporter, a site manager and a project assistant. Most of them dedicate between 20%-30% of their working time on the Skopje Project.

2.3. Description of the previous external communication network.

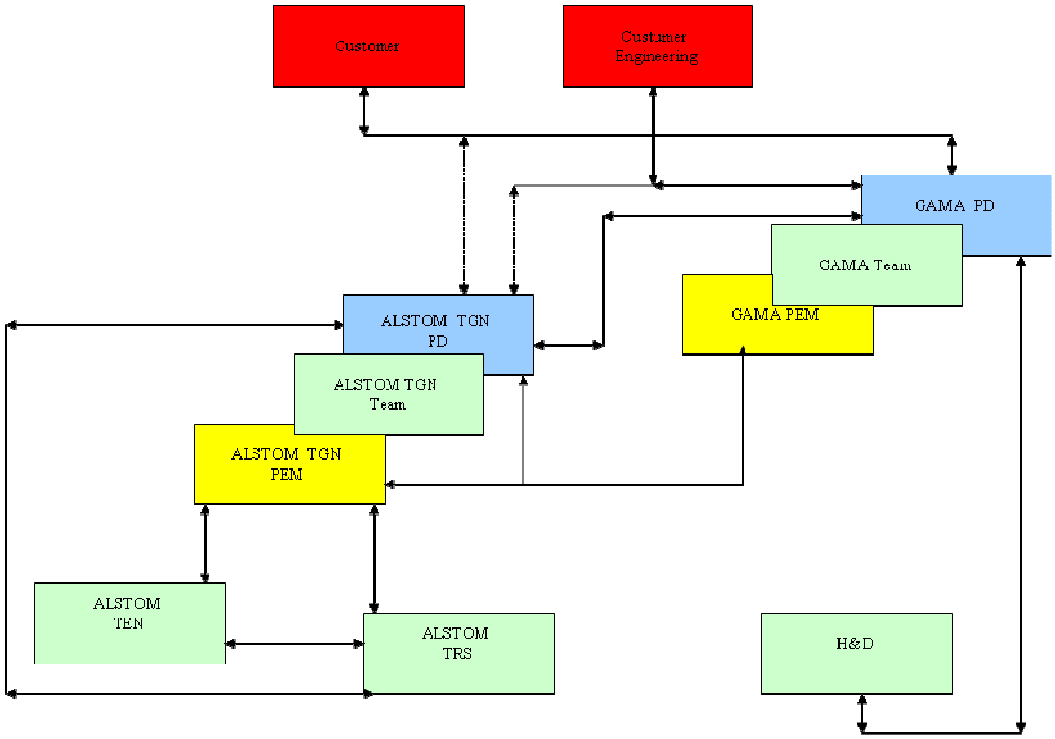
Definition of Communication Network: the transmission channels interconnecting all client and server stations as well as all supporting hardware and software.

The Client, TE-TO, was communicating directly just to ALSTOM's consortium partner, GAMA. ALSTOM Switzerland, however, was in copy of all the letters between GAMA and the Client. The consulting company, hired by the Client, Colenco was communicating, directly to GAMA and to ALSTOM.

GAMA and ALSTOM were communicating between them throw 3 communication channels: ALSTOM Project director – GAMA Project Manager, ALSTOM Project engineering Manager – GAMA Project engineering manager and ALSTOM planning manager – GAMA planning Manager. GAMA was

communicating to his engineering consulting company, H&D, which had no contact with others project stakeholders. ALSTOM was communicating with ALSTOM Poland who had no contact with others project stakeholders. ALSTOM France was communicating to ALSTOM Switzerland and ALSTOM Poland.

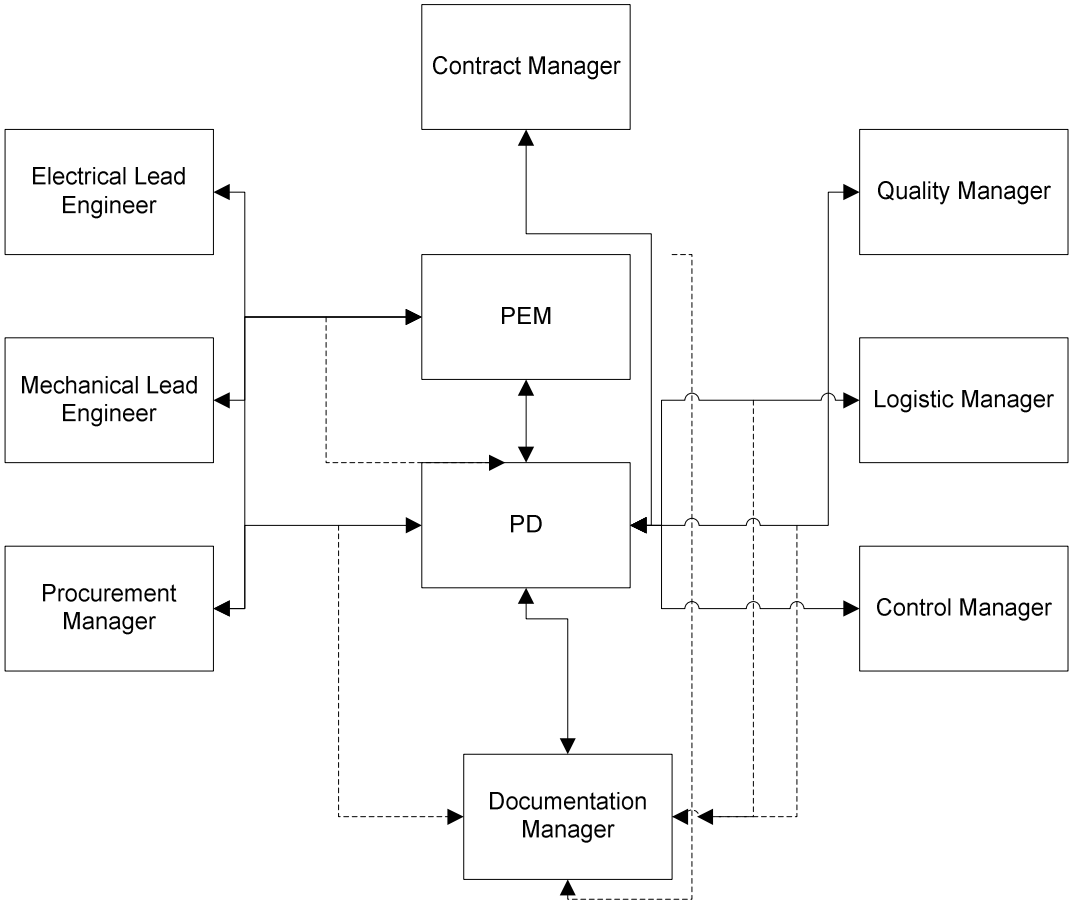
See below a graphic of the communication channels:



2.4. Description of internal communication channels.

The internal communication channels were informal and not standardized. The only rule in communication was that the PD had to be in copy of all the information exchange relative to the project.

All the engineering team was responding and communicating to the PEM. The PEM was presenting the technical issue to the PD. All the others members of the team were communicating directly to the PD. When I arrived (see the chart blow), it was established that I had to be in copy of all the correspondence. In this manner, I could manage and control the communication channels. A weekly meeting was set every Friday morning to discuss the main issues.



2.5. Communication policy as per contract.

The agreed communication system is fax followed by registered e-mail or courier.

E-mail is accepted as preliminary information in case of fast communication needs. Important and official information has to be confirmed by Fax.

Originals of Approvals, Certificates, etc. shall be delivered by hand (against receipt) or by courier.

The Contractor shall submit one copy of all relevant notices, documents and of others important information to the "Owner's engineer".

The receiver shall answer all correspondence and documents for review, between Contractor and Client, within 14 days (EPC Contract). The receiver shall answer, between ALSTOM and Partner, withy 10 days (JCA).

Notice from the Contractor to the Owner and vice versa shall be addressed to the respective Representatives of the Party.

Every month the Contract shall submit a Monthly Progress Report to the Client; in this regard, ALSTOM has to submit his Monthly Progress Report to his partner who shall integer it in the Consortium Monthly Progress Report.
Every month shall be schedule a Progress meeting between the Client and the Consortium (EPC Contract). A previous meeting, between ALSTOM and his Partner shall be held monthly (Joint Contract Agreement).

The following words have to be intended as explained below:
Definitions:
"Owner" or "Employer" or "Customer" is the Client.
"Owner's Representative" is the Client Project Director.
"Owner's Personnel" or "Owner's Engineer" is the Consulting company hired by the Client to supervise Client's interests in the Project.
"Contractor" is the Consortium between ALSTOM and ALSTOM Partner.
"Contractor Representative" is ALSTOM Partner Project Manager
"Consortium leader" is ALSTOM Partner.

3. My target.

The Project was late because of many reasons. One was the lack of communication internally ALSTOM and externally. The delays on the project exposed every Party to additional costs and, in this regard, it was very important for each party to maintain an efficient communication and documentation control to produce evidence of delays responsibilities.
Therefore, the main target that was assigned to me was to build a system to manage and to maintain the documentation and communication control. In addition, I had to improve the communication procedures.

4. First Stage.

The fist stage consisted in understanding the actual Project situation and the communication needs. Therefore, at the first stage I studied the EPC Contract and the JCA contract and all the exchanges of formal correspondence between the Parties. Once, I got a more or less clear idea of what was the actual situation of the Project, I began to start to build an idea to maintain the correspondence control. In a second time, once I had understood the communication needs I wrote the preliminary Communication Plan. In this stage, as I was not a specialist of Communication Management, the Project Director gave me the manual of the Project management institute standards committee titled "Project Management Body of Knoledge" as a guide for my work.

4.1. Correspondence control.

Initially, as at that time I had no training on ALSTOM communication tools, I built a simple correspondence control with Excel. As the project was characterized by many communication channels, my work started with the key and critical ones: the one between Consortium and Client and the one between ALSTOM and Partner.

The necessity to build the correspondence control in Excel was also due to the lack of standardization of the correspondence (with the word correspondence, I mean the exchange of e-mails, letter and documents). To explain the lack of standardization and the consequential problems of maintain an efficient correspondence control, I have to distinguish and analyze the different types of correspondence in two different way: by communication channel and by nature of correspondence (technical or contractual correspondence).

4.1.1. Communication Channel Consortium - Client.

This communication channel is characterized by contractual and technical formal letter and by an acceptable level of standardization. By the way, ALSTOM had not much influence on this communication channel, because, as

explained above, ALSTOM does not communicate directly to the Client and is just in copy of the Consortium – Client correspondence.

Contractual correspondence.

The contractual correspondence was standardized in the following way:

- Each letter had a number, a date, a subject and a reference (if necessary).
- The body of the letters was not structured and the status of the answered letter was not clear

b. Technical correspondence

The Technical correspondence was standardized in the following way:

- Each letter had a number, a date, a subject and a reference (if necessary).
- The technical documents were sent as attachment in PDF format.
- No list of documents was present.
- Comments to the documents were sent in Excel format.
- Not precise action required

4.1.2. Communication Channel ALSTOM – Partner.

This communication channel is characterized by formal, informal, contractual and technical correspondence. As per contract all letters as to be answered within ten working days. There are three main sub channels between ALSTOM and Partner; one between ALSTOM Project Director (PD) and GAMA Project Manager (PM), one between ALSTOM Project Engineering Manager (PEM) and GAMA Project Engineering Manager (PEM) and another between ALSTOM planner and GAMA planner.

The first and the second sub channels are characterized by formal and informal correspondence. The third one is informal.

a. Communication channel between PD and PM.

This channel is characterized by formal and informal correspondence. At the beginning of the project the formal correspondence was not totally standardized and not always sent through PIRS. When it was sent through PIRS it had number, reference date and subject.

The informal correspondence was not sent through PIRS and has not standardization. Anyway this kind of correspondence had no need of further control.

b. Communication channel between ALSTOM PEM and GAMA PEM.

This channel is characterized by technical correspondence. Through this channel ALSTOM and GAMA send project documents. It is a formal channel. However, the channel suffers of a huge lack of standardization: ALSTOM correspondence to GAMA is sent through PIRS and has a number, a date, a subject but has no reference.

GAMA correspondence to ALSTOM is not sent to PIRS, has no number and no reference.

C. Communication channel between ALSTOM and GAMA respective schedulers.

This is an informal channel used for fast communications regarding the schedule. It has not contractual value.

4.1.3. Needs of the Correspondence control.

To control the correspondence is necessary, first of all, to have a clear view of the status of the correspondence and second is very important to maintain as much references and information as possible about each letter and document. However, too many information is not useful and it will make the correspondence control slow and inefficient. It is important that the correspondence system it self can avoid people to open the PIRS documents to read the entire letter. And also, it is necessary that in the correspondence control is clearly defined for when it is expected an answer. For the above mentioned communication channel I built the same type of correspondence control system but the lack of standardization of the ALSTOM – GAMA channel created much more difficulties to maintain an efficient control. To maintain an efficient control, from my experience and for Scopje Project where necessary the following information:

- Correspondence number

- Correspondence subject
- Correspondence action
- Correspondence date
- Correspondence author
- Correspondence reference
- Required action: reply, revise, for information, etc
- Correspondence status
- Responsible
- Correspondence Target date
- Comments and answer reference.

Please find below examples of the Correspondence control system.

Number	Title	Action description	Action Reference	Date	Autor	Scope	Reference to	Q/R	Status
53	RE: ST Requirements for Power Sypply of Motor etc.		Mails from Ali	18/10/2007	Ali Ufacik	Alstom		Information	
52	FW: Replay to GAMA's Comments to Synchronization System Conceptual Design#2	Alstom as to answer to Gama's comments to Synchronization System Conceptual Design#2	Mails from Ali	17/10/2007	Ali Ufacik	Consortium?	MoM Electrical meeting_20-21.9.2007.doc 17	R and Q	Open
51	Clarifications to Items of Electrical Meeting 21.09		Mails from Ali	17/10/2007	Ali Ufacik	Consortium?	MOM of Electrical Meeting dated 21.09.2007	R	
50	FW: Compare of ALSTOM Unit Protection Single Line Diagram and Tripping Logic Diagram with GSU Transformer		Mails from Ali	17/10/2007	Ali Ufacik	Consortium	I&C Engineering meeting in Prague on 21.09.2007.	Information	Open
49	FW: Document List	Alstom to update Gama about the document list	Mails from Ali	17/10/2007	Ali Ufacik	Consortium		Q	Closed
48	RE: ST Foundation Loads & Permissible Forces	The documents are not complete. Gamma needs other informations to proceed	Mails from Ali	16/10/2007	Ali Ufacik	Alstom	ST Foundation Loads & Permissible Forces (Memo) N 78	Q	Open
47	Availability and Quality of Material For Information		Mails from Ali	10/10/2007	Ali Ufacik			Information	
46	RE: GT Fire Fighting and Explosion Documents	The Natural Gas consumption value is given as 11.7 kg/s in the above mentioned while this value is specified as 10.6 kg/ in the HTCT681431 Fuel System Specification document. We need a quick clarification regarding to this discrepancy as this has an impact to our ongoing engineering works	Mails from Ali	10/10/2007	Ali Ufacik	Consortium?	GT Fire Fighting and Explosion Documents (Memo) N 70	R and Q	Closed
45	Lifting Plan-Preliminary	Lifting Plan document for your review and comments	Mails from Ali	10/10/2007	Ali Ufacik	Consortiun?		Q	Open
44	Topographic Survey Document		Mails from Ali	10/10/2007	Ali Ufacik			Information	
43	Document List	As an action item in the MOM of Monthly Progress Meeting dated 27 Sept. 2007, Consortium is to submit the Engineering Deliverable List to the client. Please find in the attachment Alstöm related Engineering Deliverable List extracted from JCA. Please check the dates and the documents and provide us your feedback not later than 12 th of September.	Mails from Ali	10/10/2007	Ali Ufacik	Alstom			Open

Letter	Title	Action description	Action Refe	Date	Autor	Reference to	Status	Assigned to	Target date
88	Alstom Enginering Deliverable List (Memo)		Mail to Ali	17/10/2007	Lindvall Anders	FW: Document List N 49			27/10/2007
86	2nd version ST P&ID incl answers to 1st Issue (Memo)	Gama as to review the 2nd version of ST P&ID and foeward to Colenco for their comments.	Mail to Ali	16/10/2007	Lindvall Anders	CPE-GPS-0021 , RE: ST P&IDs- Comments to ST Thermal P&ID N 40	Open	Gama + Colenco	26/10/2007
85	Notification letter for non Availability of Payment Security according to Agreement (Memo)	Send to Te-To Alstom letter concerning payments of 15.10.2007	Mail to Ali	15/10/2007	FRIEZ Pierre				25/10/2007
84	Documentation submission delay (Memo)		Mail to Ali	15/10/2007	FRIEZ Pierre			Alstom + Gama	25/10/2007
83	Replay to clarification on GT Fire Fighting and Explosion Document (Memo)	Alstom as to provide an updated version of the GT Fire Fighting and Explosion Document	Mail to Ali	11/10/2007	Lindvall Anders	RE: GT Fire Fighting and Explosion Documents N 46	Open	Alstom	21/10/2007
82	Replay to GAMA's Comments to SLD and new revision of SLD (Memo)	GAMA's review	Mail to Ali	11/10/2007	Lindvall Anders	GPS Comments to SLD for AP Scope n38	Open	Gama	21/10/2007
81	Skopje Project: Quality Plan and Inspection Test Time Schedule 1 (ITTS) (Memo)		Mail to Ali	11/10/2007	Hole Darren				21/10/2007
80	Relpay to GAMA's Questions from 26th September 2007 (Memo)	Alstom's replay to GAMA's questions from 26th September 2007 from the GT side	Mail to Ali	10/10/2007	Lindvall Anders	Technical Questions to Alstöm N 41	Closed	Alstom	20/10/2007
79	GT Electrical Arrangement Documents (Memo)	Drawings as input and for GAMA's review	Mail to Ali	10/10/2007	Lindvall Anders		Open	Gama	20/10/2007
79	Supporting documents for invoicing - ADDENDUM (Memo)	Transmit it to client	Mail to Ali	10/10/2007	FRIEZ Pierre		Closed	Teto	20/10/2007
78	ST Foundation Loads & Permissible Forces (Memo)	GAMA's review and as input	Mail to Ali	09/10/2007	Lindvall Anders		Closed	Gama	19/10/2007
77	DCS Architechure (Memo)		Mail to Ali	09/10/2007	Lindvall Anders		Closed		19/10/2007
76	Re: Mailed in: CPE-GPS-028-Project Quality Plan-Rev00-GPS-CPE-2007-075 (Reply)		Mail to Ali	09/10/2007	FRIEZ Pierre			Colenco	19/10/2007
75	Request for Project Committee meeting (Memo)		Mail to Ali	09/10/2007	FRIEZ Pierre				19/10/2007
74	Alstom's Quality survey (Memo)	Send the following letter together with attachment to TE-TO	Mail to Ali	09/10/2007	FRIEZ Pierre		Open	TETO	19/10/2007
73	Air Intake System General Arrangement (Memo)	GAMA's review and send the routing and size of the bus duct, so Alstom can put this into our pdms model.	Mail to Ali	09/10/2007	Lindvall Anders		Open	Gama	19/10/2007

4.1.5. Documentation control in Excel: "The Master Drawing List".

To keep the documentation control is not enough to maintain a correspondence control although the documents are sent within the PIRS documents (formal e-mail) because more than one document can be sent within the same e-mail. In this regard one reply to one e-mail does not always close, for example, an action on one of the documents present in the e-mail. Additionally, it is necessary to have a list were documents can be sorted one by one, by title or by number. In this regard, I built a Master Drawing List composed by three main sheets: one considering all ALSTOM documents submitted or to be submitted to the Client or to the Partner sent by PEM to PEM, one considering all GAMA documents to be submitted to ALSTOM and a third one keeping track of all documents submitted in CD copy by DHL (according to contract) by ALSTOM PD to GAMA. The first and the third sheets are keeping the following information:

- Number
- Document Title
- Revision
- Document number
- Responsible
- Scheduled submission date
- Submitted to: GAMA, Client
- Transmittal number (E-mail number)
- Date
- Client comments
- Status of Client comment (answered, open, closed)

The second sheet was keeping the following information:

- Number
- Document Title
- Revision
- Delivery date as per contract

- Actual delivery date
- Status
- Scheduled submission date
- Revision submission date
- Letter number of ALSTOM comments
- Date of ALSTOM comments
- Remarks

See below some examples of the master drawing list:

No.	Document Title	Rev.	Alstom's	Document No.	Responsible	Doc Status	Scheduled Submission Date	Submitted to		Alstom's	Colenco / TE-TO Comments			GAMA Comments	GAMA's Comments	
			Transmittal No.					TE-TO	GAMA	Date	Letter No.	Date	Status	Letter No.	Date	Status
D	Documentation List acc. EPC															
6	GT PI&D's		CHAP/GPS/0037		LE			x	S	23/08/2007				No Comments	18/09/2007	Closed
22	KKS Guidelines and keys		Contract						S					Contract		closed
	Alstom Engineering Deliverables List															
GM	GT Mechanical				LEM											
	General Documentation															
1	General Arrangement GT Power Island	-	Prage	HTCT021282				x	S	11/07/2007				No Comments	18/09/2007	Closed
2	General Arrangement GT Power Island	A	CHAP/GPS/0051	HTCT021282				x	S	09/09/2007				No Comments	18/09/2007	Closed
3	General Arrangement GT Power Island	B	CHAP/GPS/0133	HTCT021282				x	S	20/11/2007				Document superseeded	12/12/2007	Closed
4	General Arrangement GT Power Island	C	CHAP/GPS/0168	HTCT021282					S	29/11/2007						
5	List of Mechanical Interface Data	A	CHAP/GPS/0035	HTCT324575					S	22/08/2007				No Comments	18/09/2007	Closed
6	List of Mechanical Interface Data	B	CHAP/GPS/0096	HTCT324575					S	23/10/2007				No Comments	28/11/2007	Closed
7	List of Mechanical Interface Data	C	CHAP/GPS/0168	HTCT324575					S	29/11/2007						
8	Scope Split for Foundation Embedments	A	CHAP/GPS/0036	HTCT438265					S	23/08/2007				No Comments	28/11/2007	Closed
9	Standard Laydown Plan - 1 GT Outdoor	-	Prage	HTCT021259				x	S	11/07/2007						
10	Noise Levels of GT Equipment package		Contract						S					Contract		Closed
11	Gas Turbine Erection Information Overview	A		HTCT679074		TGN/TGN/0026										
12	Unloading of Gasturbine and Generator	B	Prage	HTCT651120				x	S	11/07/2007						
	Mech. Interface Data acc. HTCT324575															
16	Cooling Water Piping Interface	A	CHAP/GPS/0035	HTCT434392					S	22/08/2007				1 Comment	18/09/2007	Closed
17	Fuel Gas Block Interface	B	CHAP/GPS/0035	HTCT435096 Replaced with HTCT 438775					S	22/08/2007				1 Comment	18/09/2007	Closed
15	Fuel Gas Skid	-	CHAP/GPS/0168	HTCT 438755					S	29/11/2007				No Comments	12/12/2007	Closed
18	Vent Pipe Interface Basic System Parts	E	CHAP/GPS/0035	HTCT434548					S	22/08/2007				1 Comment	18/09/2007	Closed
19	Vent Pipe Interface Fuel Gas Parts	B	CHAP/GPS/0035	HTCT438107					S	22/08/2007				No Comments	18/09/2007	Closed
20	Water Drain System Interface	B	CHAP/GPS/0035	HTCT434977					S	22/08/2007				1 Comment	18/09/2007	Closed
21	Drain Piping Interface Overview	-	CHAP/GPS/0035	HTCT324509					S	22/08/2007				1 Comment	18/09/2007	Closed

Sl. No.	Document Title	Rev.	GAMA Delivery Date	Actual Date	Status	Scheduled Submision Date	Revised submissio n date	Actual Date	Alstoms Comments		RemarKs
									Letter No.	Date	
	General										
1	Plant Performance Test Procedure, 1st issue		PAC-3								Acc. Contract
2	Plant Performance Test Procedure, final issue		PAC-1								Acc. Contract
	Engineering Deliverables List										
GM	**GT Mechanical**										
1	Site Arrangement Layout, 1st issue		01/08/2007	17/09/2007	**Closed**				Prage	11/07/2007	
2	Site Arrangement Layout, final issue		01/10/2007	28/09/2007	**Closed**				CHAP/GPS/0051	09/09/2007	
3	Seismic Concept - 1st issue		15/08/2007	28/09/2007	**Partly Delivered**				CHAP/GPS/0072	05/10/2007	Missing information, not possible for Alstom to use => Main foundation delayed and cause a risk for placed purchage orders
	Seismic Concept - 2nd issue		15/08/2007	19/11/2007	**Partly Delivered**				CHAP/GPS/0159	27/11/2007	Missing information, not possible for Alstom to use => Main foundation delayed and cause a risk for placed purchage orders
4	Noise Study		01/08/2007	05/11/2007	**Closed**				CHAP/GPS/0147	23/11/2007	Received with delay
5	Lifting Concept		01/09/2007	10/10/2207	**Preliminary**				CHAP/GPS/0173	04/12/2007	Final document outstanding
6	Plant Fire Protection Concept		15/09/2007	28/09/2007	**Partly Delivered**				CHAP/GPS/0100	24/10/2007	Alstom gave feedback on document. No updated version. Might have an impact on Alstom depending on final version
7	Plant Explosion Protection Concept		15/09/2007	28/09/2007	**Partly Delivered**				CHAP/GPS/0100	24/10/2007	Alstom gave feedback on document. No updated version. Might have an impact on Alstom depending on final version
8	General Layout Hazardous Area		01/10/2007	28/09/2007	**Closed**				CHAP/GPS/0070	05/10/2007	
9	Plant Drain System Concept		15/09/2007	28/09/2007	**Closed**				CHAP/GPS/0100	24/10/2007	Received with delay
10	Plant Earthing and Lighting Protection Concept		15/08/2007	28/09/2007	**Closed**				CHAP/GPS/0100	24/10/2007	Received with delay

No.	Document Title	Rev.	Document No.	Responsible	Doc Status	Scheduled Submission Date	Submitted to	Alstom's Trasmittal number	Alstom's date	Colenco / TE TO Comments			GAMA Comments
EBD	**TGN Erection Bid Documentation**												
	Mechanical Equipment												
ME	BoQ MechEquipm												
1	Skopje BoQ GT13E2-							CHAP/GPS/0194	12/12/2007				
A	Arrangements												
1		C	HTCT021282_C					CHAP/GPS/0194	12/12/2007				
GI	General Instructions												
1			1AHX701799					CHAP/GPS/0194	12/12/2007				
2		A	HTCM233236_A					CHAP/GPS/0194	12/12/2007				
3		B	HTCT601070_B					CHAP/GPS/0194	12/12/2007				
4		A	HTCT679074_A					CHAP/GPS/0194	12/12/2007				
F	Foundation (Base Plates)												
1		A	HTCT015483_A					CHAP/GPS/0194	12/12/2007				
2		B	HTCT021118_B					CHAP/GPS/0194	12/12/2007				
3		A	HTCT114963_A					CHAP/GPS/0194	12/12/2007				
4		A	HTCT114964_A					CHAP/GPS/0194	12/12/2007				
5			HTCT122358-					CHAP/GPS/0194	12/12/2007				
6		A	HTCT122359_A					CHAP/GPS/0194	12/12/2007				
7			HTCT323005					CHAP/GPS/0194	12/12/2007				
8		-	HTCT429838_-_					CHAP/GPS/0194	12/12/2007				
9		D	HTCT600991_D					CHAP/GPS/0194	12/12/2007				
10		A	HTCT601227_A					CHAP/GPS/0194	12/12/2007				
GTB	GT Thermal Block												

4.1.6. Communication channel ALSTOM Switzerland (TGN) and ALSTOM Poland (TSR).

This communication channel is characterized by formal, informal, contractual and technical correspondence. This correspondence, at the first stage of the project was not standardized and there were problems in misunderstanding and communication. As for the others channels, has to be distinguished the technical correspondence and the contractual correspondence.

a. Technical correspondence:

ALSTOM TGN main sender and receiver of this kind of correspondence is the PEM. ALSTOM TSR, instead, had more than one sender and receiver. All the leading engineers of the TSR team were communicating directly to ALSTOM TGN PEM without ALSTOM TSR project Manager filter. This way of working was creating many problems to the communication flow: first of all, the communication received from ALSTOM TSR was not standardized, incomplete, hardly understandable and too frequent. Second, the correspondence control was hardly possible because no letters from ALSTOM TSR were sent throw ALSTOM TGN PIRS; ALSTOM Poland (TSR), was using another version of PIRS not adaptable to ALSTOM Switzerland PIRS. By the way, the agreed PIRS for the Skopje Project is ALSTOM Switzerland one. Third the correspondence coming from TSR was not directly usable to answer to GAMA's questions and ALSTOM TGN PEM had to revise and rewrite it. As ALSTOM TSR is not just a simple sub supplier of ALSTOM TGN (they belong to the same company) a further collaboration was needed.

b. Contractual correspondence

The contractual correspondence was not standardized and not sent through PIRS. The sender and the receiver are ALSTOM TGN PD and ALSTOM TSR PM.

4.1.7. Communication channel ALSTOM Switzerland (TGN) and ALSTOM France (TEN).

The communication channel was characterized, compared to the others, by the few exchange of e-mail and documents. As this communication channel was not

critical and there were no problems on the performance of TEN scope of supply, ALSTOM Switzerland decided, since November, that TEN shall communicate directly with TSR. The reason was that almost all the interfaces of the Steam Generator were to the Steam Turbine and just few of them with the complete Plant. In this regard, ALSTOM Switzerland left his internal sub suppliers communicate freely to speed up the process and get involved just when some misunderstanding were raised between his sub contractors.

By the way, all the documents of the Steam Generator needed by the Partner and the Client were sent directly to ALSTOM Switzerland

4.2. The Preliminary Communication Management Plan

To write a Communication Management Plan is necessary, first of all, to plan the communication and to analyze the inputs as the Project Management Plan and the Contract. After that it is necessary to decide, according to the inputs who has to do what, who should be the destiny, who else should be informed and how. In a third stage is necessary to study and decide how the information systems could help and should be used for the communication distribution, management and control.

4.2.1. Communication Planning

As defined in the guide "Project Management Body of Knowledge" the communication planning is a process that has as inputs the Enterprise Environmental Factors and the Organizational Project Assets and as output the Communication Management Plan. The Enterprise Environmental Factors are all the factors and systems that surround and influence the Project's success such as:

- Organization or company culture and structure
- Governmental and industrial standards
- Existing human resources
- Company work authorization system
- Project Management information systems etc.

The Organizational Project Assets are any and all of the assets which are used to influence the Project success . Any and all of the organizations involved in the

project can have formal and informal policies, procedures, plans and guidelines whose effect must be considered. Organizational process assets represent also the organizations learning and knowledge from the previous projects as completed schedules, risk data and earned value data. For the communication planning are particularly important the lesson learned and historical information because can provide both decision and results based on previous similar projects concerning communication issues.

Another important input to the Communication Management Plan is the Project Management Plan because provides background information about the project, including dates and constraints that may be relevant to communication planning.

Coming back from the communication planning theory to my project, I had as inputs previous communication procedures of other projects, the Project Management Plan and the ongoing way of exchange information internal and external. The external communication was set up as per contract, legally correct but not completely efficient, (see point 2.5. Communication policy as per contract) and the Internal one was set up according to the Project Director Instructions.

According to the Project Management Plan it was established that the PD shall be in copy of all the internal correspondence; to keep the correspondence control, the external correspondence should be sent and received just by two entities of the team, the PD and the PEM, who will distribute it to the team.

The Communication Management Plan was been written after five months since the beginning of the project; therefore I had to merge the ongoing way of manage the correspondence and the necessity of the correspondence management and control.

A key component of planning the project's communications, therefore , is to determinate and to limit who should communicate with whom and who should receive what information.

In this regard, I built up (see below and see the attached Preliminary Communication Management Plan) two tables, one for internal and one for external communication needs. The tables were built according to the EPC and

to JCA Contracts and according the Project Management Plan. They represent the communication rules for the main communication channels.

External Communication rules and needs																	
Parties	**Customer Organization**			**ALSTOM (Switzerland) Ltd.**				**ALSTOM (Poland)**			**Gama Organization**			**Colenco Organization**			
Channel	**PD**			**PD**	**PEM**	**DOC. ADMIN**	**Leading Eng.**	**PM**	**Leading Eng.**		**PD**	**PEM**		**PD**			
CHAP/GPS/xxxx				C S	S C	C	C	C			C	C					
GPS/CHAP/xxxx				C	R						C	S					
GPS/ALS/xxxx				R	C	C					S						
GPS/TTA/xxxx	R			C							S			C			
GPS/CPE/xxxx	C			C							S			R			
TETO/GPS/xxxx	S			C							R			C			
COL/GPS/xxxxx	C			C							R			S			
TGN/TSR/xxxx				S C	S C	C	C	R	C								
TSR/TGN/xxxx				R C	R C	C	C	S	C								

Internal Communication rules and needs										
Main Channels	Mechanical Eng.	Electrical Eng.	Contract. Manager	Control	Logistic	Quality	Procurement	Documentation manager	PD	PEM
MEC/PEM	S, R								C	R, S
ELEC/PEM		S, R							C	R, S
LOG/PD					S, R			C	R, S	
PROC/PEM							S, R	C	C	R, S
PROC/PD							S, R	C	R, S	
CONT/PD				S, R				C	R, S	
DOC/PD								S,R	R, S, C	R,S
CONTR/PD				S, R				C	R, S	C
PD/PEM								C	S, R	R, S

A second necessary component to plan and write the Communication Management Plan is the study of the information systems in use in ASTOM and of their possibilities. At this stage of my internship, I was not trained yet to use PLANT-PDM and I studied how PIRS could be used properly for the Project. In this regard, first I established the needs of the exchange of correspondence, internal and external and second the needs of the correspondence management and control: I determinate which type of correspondence had the necessity to be sent through PIRS, which could be sent by normal e–mail, what should be specified in the correspondence: title, number, date, reference, List of documents attached, kind of action expected from the receiver. I did this work for each communication channel, however, in particular for the external ones because internally there were less constraints and difficulties (see attached the Communication Management Plan).

The Communication Management Plan was distributed to the members of the team who made their comments: the main comment received was about the waste of time to send the correspondence through PIRS and to fill all the information request for a proper correspondence management. However, the document, after small changes, was signed by all the members and approved (This does not mean that all the members were performing according to the Communication Management Plan).

4.3. Conclusions and results of the first stage.

The duration of the period defined as " first stage" was one month and half. As described above, I built three simple systems in Excel to keep track of the correspondence, to manage and control it and one to control and manage the documentation. I started to manage the correspondence and I studied the needs of the correspondence management and control while I was writing the preliminary Communication Management Plan. I planned, wrote and submitted to the team the preliminary Communication Management Plan.

5. Second stage

During the second stage I had to manage and improve the Correspondence and Documentation Management and Control Systems. First of all I started to reorganize the PIRS data base to switch the correspondence control from the Excel system to the automatic control under PIRS. To create an appropriate and efficient Database it was needed an higher standardization of the correspondence flow internal and external ALSTOM; for this reason I had to follow and manage the process of standardization. Second, I updated the Communication Management Plan to teach to the team how should they act with correspondence. I, also, proposed some solutions to speed up the communication flow between ALSTOM and his Partner Gama ; this solutions have been discussed in a technical meeting between ALSTOM, GAMA and their Consulting Company H&D, held in Baden on the 6-7.11.07. Another

responsibility I had was to prepare the Monthly progress report to be issued to the Client.

5.1. Reorganization of PIRS Data Base.

5.1.1. Description of PIRS and his functionalities.

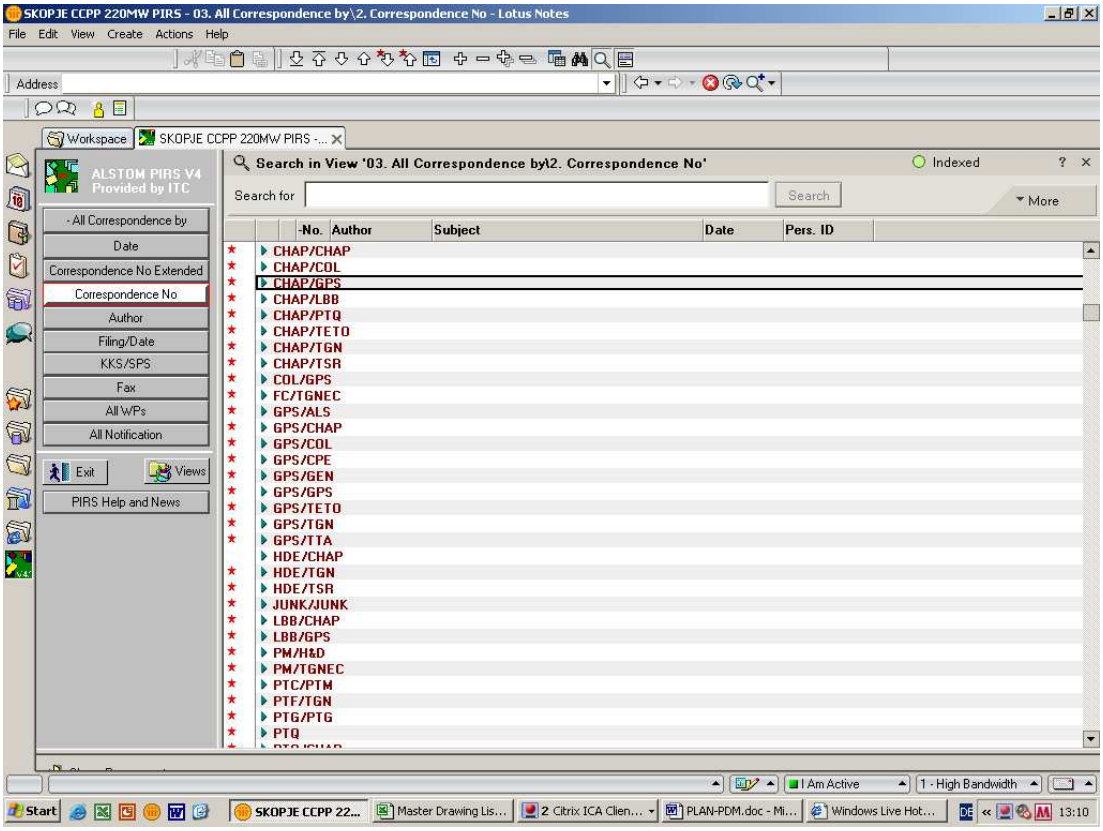
PIRS is an information system developed and used by ALSTOM since fifteen years. At this moment, in ALSTOM Baden, it was in use the Version 4.4 .

The main functionalities of PIRS are: the possibility to create, send, forward, store and manage PIRS documents; it is ALSTOM policy to use PIRS Documents for internal and external communication to keep track of it. PIRS has also the possibility to set the PIRS documents control, to create communication channels, to create particulars documents for the Claim Management and for the Actions Control. It has also the possibility to sort documents by communication channel or by position (folder)

5.1.2. Previous usage of PIRS in Skopje Project.

In Skopje Project the team was using PIRS without an appropriate organization of it. Many communication channels were created at the beginning of the project, through which the members of the team were sending documents internally and externally. Many channels were not used and others were used for different kind of correspondence. There were no procedures regarding the correspondence sending and storage and no procedure regarding the correspondence control.

See below a picture of the communication channels created at the beginning of the project:



Working in this way it was not possible to easily find documents when needed. For this reason I started a reorganization of the PIRS database.

5.1.3. Reorganization of PIRS database

To reorganize the PIRS database first of all I had to study and decide which communication channels were necessary and for which kind of correspondence. In this regard I decided that was necessary:

- A channel for the communication between the ALSTOM Switzerland engineering team to communicate to the PEM and to the PD and vice versa. Channel names respectively TGN/CHAP/xxxx and CHAP/TGN/xxxx
- A channel for the not technical correspondence to communicate between the team: CHAP/CHAP/xxxx. This channel had to be used by the PD, PEM, Quality Manager, Logistic Manager, Contract Manager, Procurement Manager, Control Manager and me.

- A channel for the communication between ALSTOM Switzerland and ALSTOM Poland and vice versa : TGN/TSR/xxxx and TSR/TGN/xxxx.
- A Channel for the communication between ALSTOM Switzerland and GAMA: CHAP/GPS/xxxx.
- Two channels for the communication between GAMA and ALSTOM Switzerland: GPS/CHAP/xxxx for the technical correspondence; GPS/ALS/xxxx for the contractual correspondence; I decided to use two different channels because the technical correspondence was always addressed to the PEM and sent by Gama PEM and the contractual correspondence was always addressed to the PD and sent by GAMA PM. A second reason was to make a distinction between technical and contractual correspondence.
- A channel for the communication between ALSTOM Switzerland and ALSTOM France and vice versa: TGN/TEN/xxxx , TEN/TGN/xxxx.
- A channel for the communication between GAMA and the Client (TE-TO): GPS/TTA/xxxx.
- One channel for the communication between GAMA and the Client consulting company (Colenco): GPS/CPE/xxxx.
- A channel for the communication between the Client (Owner (TE-TO) and his Consulting company (Colenco)) and Gama: TETO/GPS/xxxx. I decided to create just one channel for this type of correspondence because the numbering of the correspondence was consequentially; no matter if it was sent by the Client or by his consulting company.
- A channel for the communication between ALSTOM Poland and GAMA consulting company H&D and vice versa: TRS/H&D/xxxx , H&D/TSR/xxx ; this channel at this stage of the project was still not open: ALSTOM Poland and H&D were not allowed to communicate; It was open later to speed up the communication flow.

5.2. Correspondence standardization.

5.2.1. Internal correspondence

After the reorganization of the PIRS database, the project team had to change is way of sending correspondence; all the internal correspondence had to have a number and should be sent under the appropriate communication channel. To teach the team to do that I prepared and distributed the final Communication Management Plan (in attachment) were it was specified the proper way to manage correspondence.

The main problem I found it was the opposition of people to change their way of working. First of all, a part of the team believed that sending all the correspondence through PIRS it was a waste of time. Second they did not read carefully the Communication Management Plan and they did not know or they did not remembered how should they act: many letters were sent under the wrong communication channel, many letters were still sent though the mail box, many letters were not sent to all the right receivers (all the letters should be sent to the main receiver and the PD and me should be in copy).

By the way after a slow start of the process of standardization, in two weeks almost 85% of the internal correspondence was sent properly.

5.2.2. ALSTOM Poland correspondence

As explained in the paragraph 4.1.6. the correspondence between ALSTOM Switzerland and ALSTOM Poland was not standardized and not sent through PIRS. At this stage it was kindly asked to the Poland team to manage correspondence in the following way:

- the project Manager should be the only person allowed to communicate (regarding formal issues) to the PEM or the PD;
- the letters coming from ALSTOM Poland in reply to Gama's questions had to be written in a formal way to avoid the PEM and the PD to rewrite them before sending to Gama;
- all the letters should be sent through PIRS under the appropriate communication channels.

As for the previous case, they had a slow response to the new way of working but after, almost 90% of correspondence were according to the specifications.

5.2.3. GAMA Correspondence

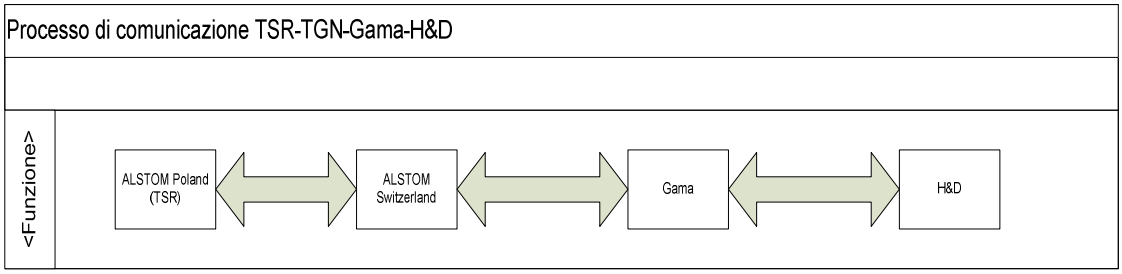
As explained in the paragraph 4.1.6. point b the technical correspondence between ALSTOM and Gama suffered by a huge lack of standardization; for this reason it was kindly asked to Gama to:

- send the correspondence also to the PIRS address (in this way the correspondence could be processed and stored);
- to give to each letter a sequential number;
- to write the references.

At the same time to our PEM it was asked to answer to Gama always through PIRS and to put references if present.

5.3. Problems of communication and opening of a new communication channel

At this stage the communication was enough standardized to make the correspondence control much easier; by the way I noted that the communication process from ALSTOM Poland to ALSTOM Switzerland and from ALSTOM Switzerland to Gama and from GAMA to H&D and vice versa was to slow (see the picture below).

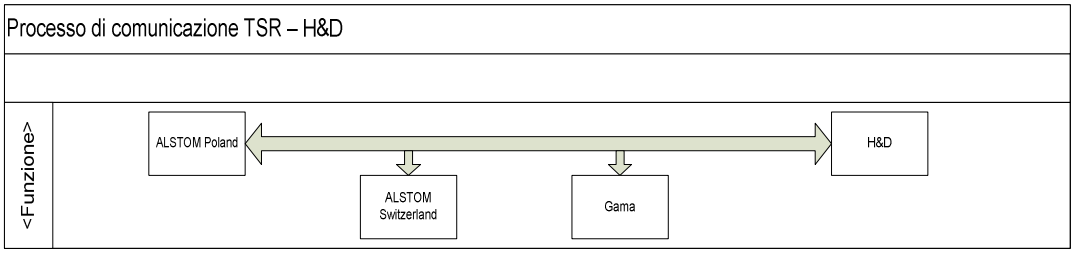


A document coming from Poland to reach H&D or vice versa sometimes needed more than two weeks; the reason was the huge amount of letters and documents (due to the vast amount of interfaces of the steam turbine to the auxiliary systems) and the communication flow. ALSTOM PEM was keeping the correspondence in his mail box for some days to revise them before forwarding

to Gama and Gama PEM was acting in the same way. Working in this manner some small technical issues were standing for weeks.

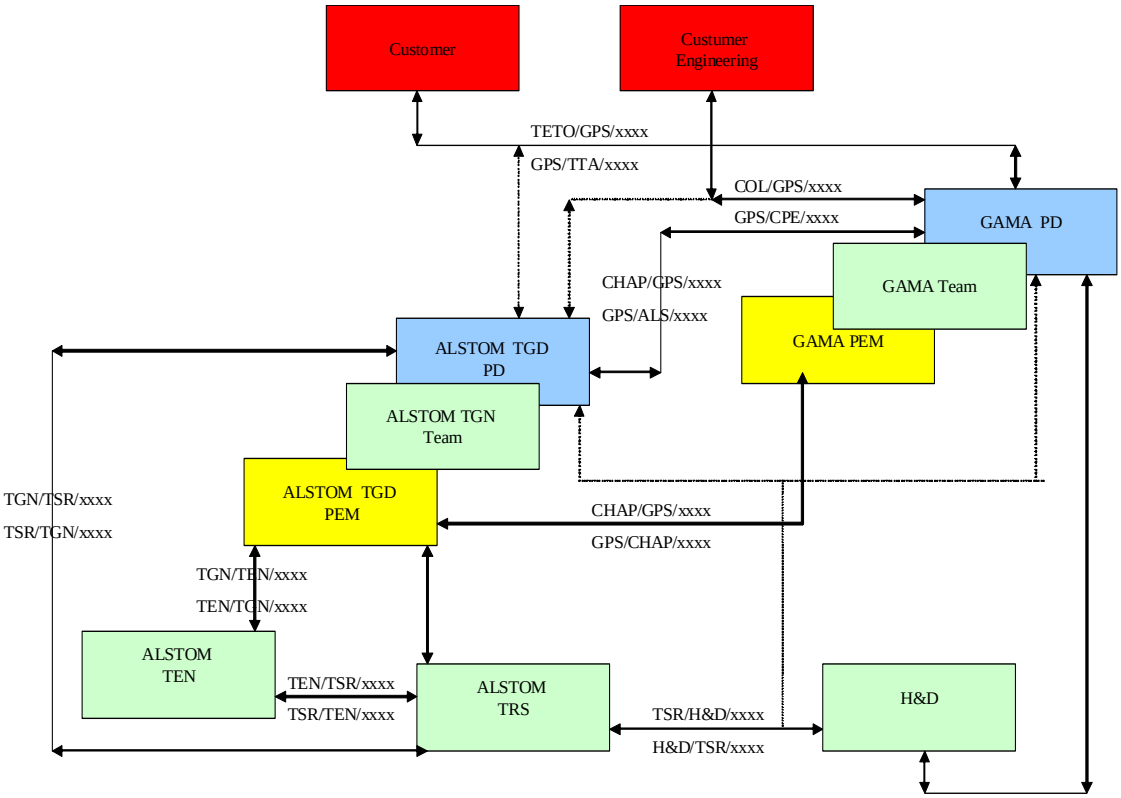
In this regard, I proposed to the Project Director the possibility of open a new communication channel between ALSTOM Poland and H&D; this option was discussed in an internal meeting between me, the PEM and the PD; the major issue against the opening of the channel was the loss of control that ALSTOM Switzerland will have on his sub supplier correspondence. In this regard I proposed myself to maintain the correspondence control.

Obviously the opening of the communication channel had to be discussed with Gama; the discussion was held in the technical meeting made in Baden with the Consortium members. The result was the opening of the communication channel (see the pictures below).



ALSTOM Switzerland and Gama were in copy of all the correspondence; the communication between ALSTOM Poland and H&D was permitted just between the two Project Manager. The reason of that was the apprehension of claims from one side to the other. The two parties were worried to expose them selves to claims if the engineering teams were speaking directly to each other. An example of this can be: ALSTOM engineering team send by mail some results; they forget to write "for H&D information" or "preliminary"; H&D and Gama could claim ALSTOM for changes if ALSTOM will issue new results in a second time.

See below the new external communication channel.



5.4. Reorganization of meetings

Another task I had to do was the organization of the meetings. Normally to all the project team was asked to attend an hour meeting every Friday. The chair of the meeting was the Project Director and the meeting was a free discussion on the major project problems. The task of the meeting was to take decision on the major issues and to check the work in progress. The problem was that many members of the team were just listening all the meeting long loosing time and getting upset.

To solve the problem my idea had been to create an action list were it was registered all the action (issues) that the team had to solve. The idea was to registered all the open issues in an excel file with the following information:

- Action number
- Action Title (this cell is filled just if the action is coming from an e-mail)
- Action description

- Action reference (where is coming from, e-mail of PD, meeting…)
- Action date
- Delivery date to Gama (Ten days after receiving the action, if not scheduled in the contract the delivery date)
- Reference
- Status
- Responsible
- Target date (When we expect the action will be done; this date is normally previous the "Delivery date to Gama" but can be also vice versa)
- Comment

The list was shared in a common folder and al the members of the team were allowed to read it. Anyway every Thursday afternoon I was sending to all the team the list so they could check if they were responsible of some issues or not. In this case they were allowed to not participate to the meeting.
During the meeting, the arguments were discussed in order and nothing was forgotten.

5.5. The Monthly Progress report.

As per contract, every month the Consortium had to submit to the Client a Monthly Progress Report. ALSTOM Switzerland had to prepare is own Monthly Progress Report and send it to Gama to integrate it in the Consortium Monthly Progress Report.
As I was in charge of communication, I had to prepare the Report. See in attachment a copy of February Monthly Progress Report.
First of all on the 23rd of each month I was sending a reminder to the Project Team and the major sub suppliers because on the 25th I had to receive all their inputs. I had to prepare my own inputs that consisted in the update status of documentation and communication changes.
On the 25th of every month all the project team and the major sub suppliers were sending to me all the information they wanted to be added to the MPR (Normally most of them were late).

The major task in writing the MPR was the consistency of information; for example the dates on the purchase order list the schedule and the dates provided to the client the month before should be consistent. For lack of communication, instead, there were many discrepancy to be solved.

In the Repot there were the following information:

- Executive summary
- Environment health and safety statistic
- Contractor Personnel
- Engineering status
- Procurement status
- Construction and commissioning
- Project schedule & progress curve
- Payment Status
- Variation to contract and change orders
- Quality assurance and control
- Major concerns and corrective actions

5.6. Conclusions of the second stage

The duration of the second stage was of a month and half. At the end of it I had reorganized the PIRS data base, issued the final Communication Management Plan, standardized the correspondence and reorganized the meetings. We decided, also, the opening of the new communication channel.

6. Third stage.

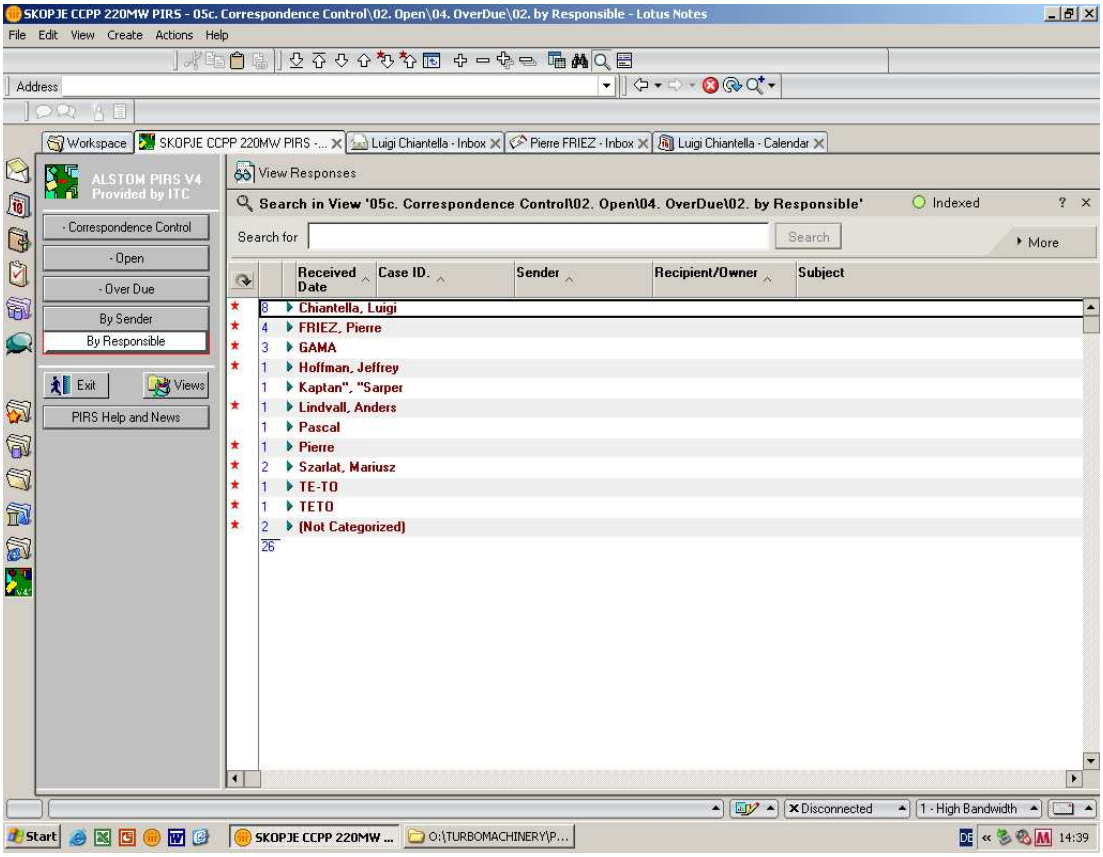
At this stage of the project there were all the assumptions (PIRS data base reorganized and correspondence standardized) to leave the communication control system in Excel and implement it using PIRS functionalities. In this regard, I implemented the communication control under PIRS for some of the communication channels; it was not possible to implement it for all of them owing to the lack of standardization of our Partner correspondence. In particular, the control of the engineering communication channel between ALSTOM and his Partner (GAMA) has not been implemented in PIRS.

6.1. Evaluation of PIRS Control System possibilities.

To present my idea to maintain the control of the communication under PIRS, I had to prepare a short presentation of PIRS possibilities and advantages.

First of all I prepared a list of possibilities and advantages of PIRS control system:

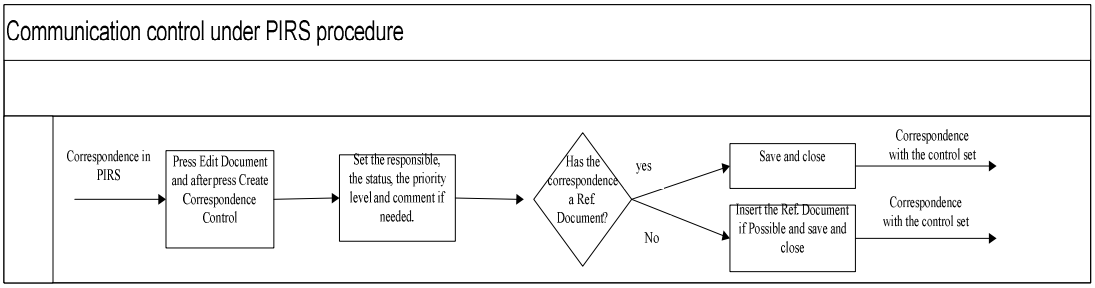
- There is the possibility to link correspondence.
- There is the possibility to assignee the correspondence to a responsible.
- There is the possibility to set the status.
- There is the possibility to add comments
- There is the possibility to open directly the correspondence from the correspondence control.
- It is implemented the function than when you set a link from one letter to another, in the second one appears automatically a link to the first one. This does not happen if the correspondence control is not set.
- There is the possibility to set the correspondence control directly in the moment that the correspondence is sent.
- There is the possibility to sort the letters by responsible, by status and by date (see the picture below as an example).



PIRS correspondence control has few defects: first of all the impossibility to use it in case of lack of standardization of the correspondence; second, however not less important, the impossibility to manage the workflow of technical documents and the impossibility to interface to PLANT-PDM (system used for this function). In that sense, it is not possible to connect automatically technical documents to the response received by e-mail and vice versa.

6.2. Communication control under PIRS procedure

I had to prepare a procedure to show and teach to the team how should they act to set or consult the correspondence control under PIRS. Below there're is the block diagram of the procedure and his explanation:



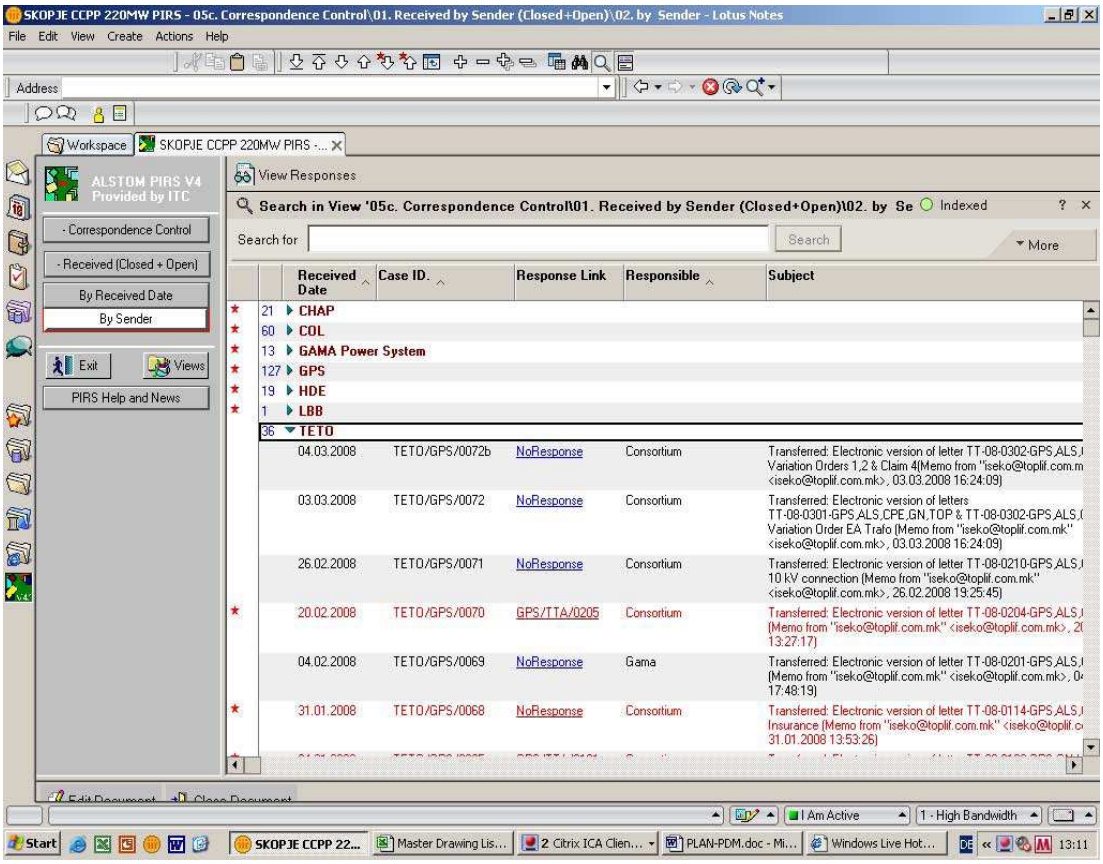
"First of all press Edit Document and after it will appear a new button on the upper bar. Press create Correspondence control; a window will appear at the bottom of the correspondence. Here you have to fill the cell "Responsible", "Status" and optionally the cells "Priority", "Company" and "Comment". Check if the "Ref. Document" is set; it should be set when the letter was sent or when it was received and processed in PIRS but not always is done; if it is not, if possible, set it. When you have finished, press "Save and Close" on the upper bar."

6.3. Implementation of the Communication control under PIRS.

After the approval of the control system under PIRS, I had to implemented it for all the recent and new correspondence. The implementation took me two weeks, however the result was excellent and all the team was happy with the new system. The photo below shows the main view of the communication control view in PIRS. As it is showed, in the main view is already visible the following information:

- Received date
- Number of correspondence
- Response link
- Responsible
- Subject

Clicking on the Response Link it is possible to open the letter which it refers to. When you open a letter it is, also, visible a small table, added to the letter text, where it is showed all the others information concerning the control.



6.4. Conclusion of the third stage.

Since the beginning the project had earned an efficient communication control; at this stage all the communication between ALSTOM, ALSTOM Poland, H&D and GAMA (Except for the engineering communication channel) were controlled automatically using PIRS. The team had an efficient access to the information needed and there were no more delays due to oversights, misunderstanding or missing information. All the team had a clear view of his pending actions and I had a complete view of all the pending actions.

7. Fourth stage.

In the fourth stage I introduced the PLANT - PDM information system for the exchange of documents with the our Partner and our sub suppliers. To introduce the PLANT- PDM information system I had to prepare and present a feasibility study.

After the introduction of the PLANT-PDM the documentation control was automatic and I spent my last mouth of working experience, as required by the Project Director, creating a documentation system to help the Claim Management. In this regard, I built dedicated documents for the Claim Management of particular issues under PIRS containing an organized set of links to the stored document regarding the issue.

7.1. Description of PLANT-PDM information System.

Plant PDM (Plant Product Document Management) is the Standard Tool in Power Turbo-Systems of ALSTOM Power to:

- Collect
- Distribute
- Manage and Control

all Engineering Documents necessary for Development, Sales, Engineering and Procurement of turnkey Power Plants or Parts of it.

After a Project is setup in Plant PDM you receive:

- A definition of all engineering Information to be delivered for a Project
- A clear split of which Partner (Risk & Responsibility and Cost Allocation) has to deliver these Information
- Which Information is having a contractual defined delivery date
- A Schedule for all these engineering Information
- Pre filled standard documents based on the selected Reference Base Plant

PLANT-PDM is an integrated part of the Central Project List (CPL) and is accessed via Intranet. To enter PLANT- PDM is necessary to open the CPL, to look for the project that is needed, to click on the "+" next to the project name and select the line called PPDM. As soon as PLANT-PDM is started, a window showing the PLANT-PDM filter appears.

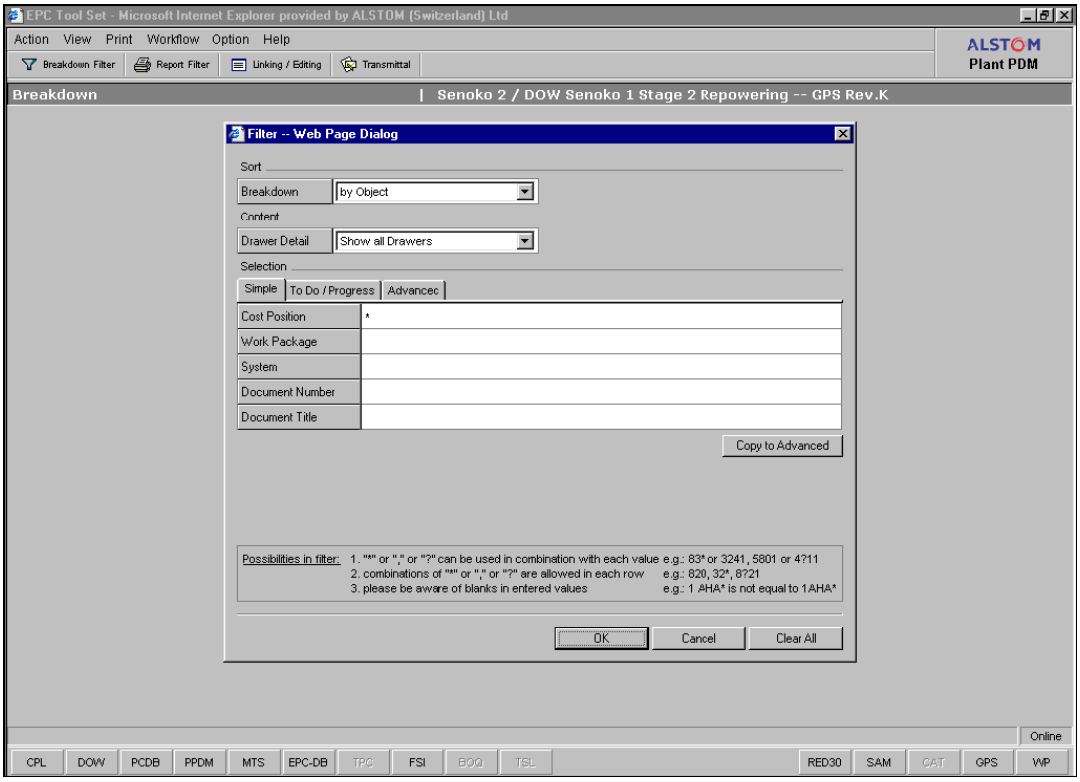
7.1.1. Filter functionalities

The filter, showed in the picture below has the following possibilities:

- It is possible to filter the documents by Cost Position, Work Package, System, Document number or Document title. To make the search it is necessary, at

least, to fill in one of these fields, otherwise it is not possible to create the list. To get all documents it is possible to fill in just an asterisk.

- It is possible to make an advanced filtering by setting the Level, Operator, Value and/or the Field.
- It is possible to filter the transmittals if the transmittal Navigation area is on.
- It is possible to memorize the filter options.



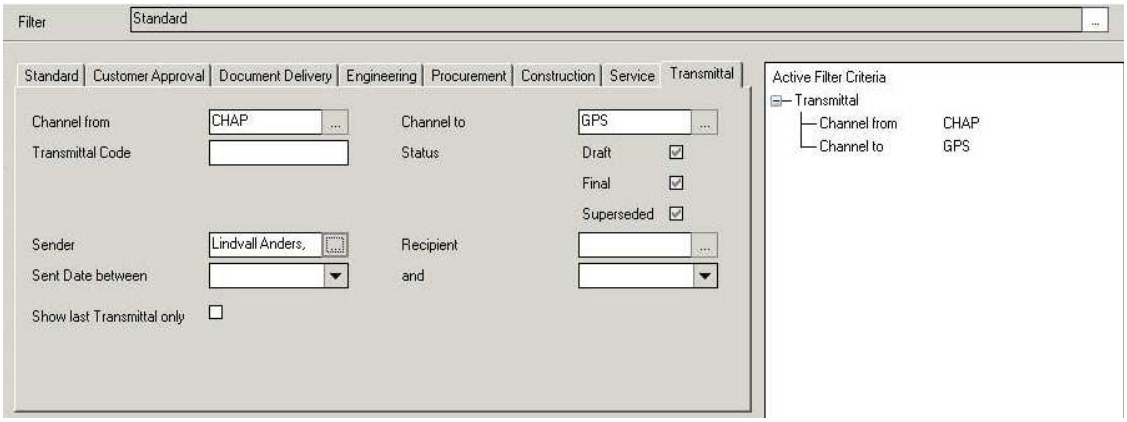
7.1.2. Reports in PLANT-PDM.

In PLANT-PDM is possible to create reports; there are two main options to create a report: It is possible to produce a Master Drawing List in PDF format or to generate a Progress Report in Excel format. Both of this possibilities are personalized by the user choosing in the Column Section the information required in the report. It is possible to memorize the report options.

It is also possible to create Standard Report as "The Client Master Document Lists" that shows all documents that are planned to be sent to clients for comments, information or approval.

- Master Drawing List in PDF format: this report can be use mainly to produce the Master Drawing List. It is possible to set a filter and visualize the documents and transmittal needed.

See the Picture below.



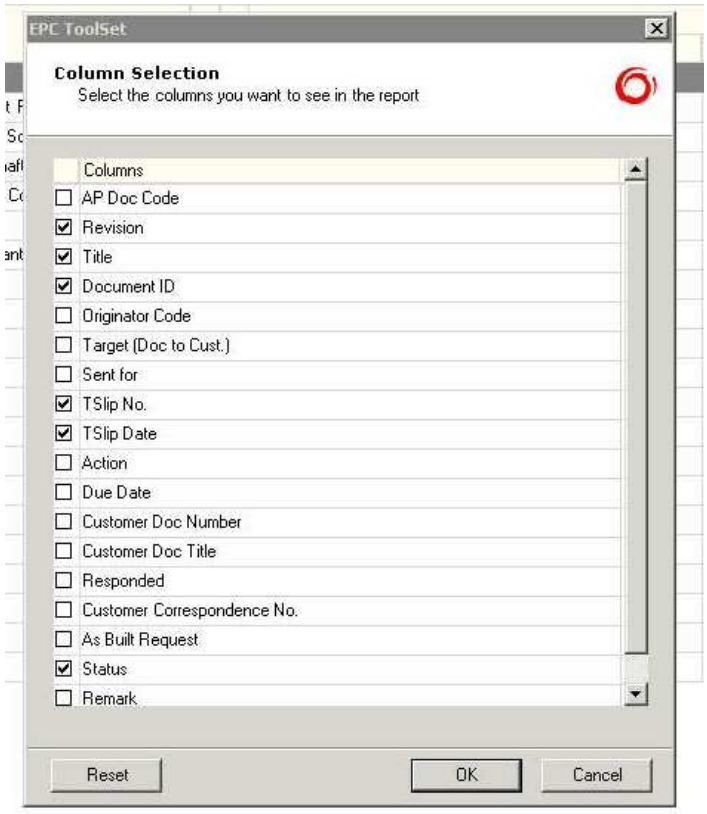
In the example below are showed the following information: Code, Main Function, Elementary System / Work Unit, Scope Position, Document Title, Transmittal No, AP DOC Code, Date.

Plant PDM Report - Master Document List

SKOPJE (GAMA) (EPCV2) / SKOPJE / In Handover

Code	Main Function / Elementary System / Work Unit / Scope Position / Document Title / Transmittal No.	Int./Ext. Doc Delivery		AP Doc Code / Doc ID	Customer Approval Follow-up				
		Target	Received		Contr. Date	Target Sent	Sent for	Responded	Status
WE	Wastes & Emissions-Wastes & Emissions			SKJ/00/-/MB01-42010/WE/xxx					
	Waste Water Source List for the Aistom Gas Turbine GT13E2 within the Combined Cycle Power Plant Skopje			SKJ/00/-/MB01-42010/WE/001					
	CHAP / FRAP / T0001			HTCT681430 -		17.08.2007			
42020	Lead Engineering for TG Mechanical Packaging								
DL	List of Documents-List of Documents			SKJ/00/-/MB01-42020/DL/xxx					
	Binder 3of 4			SKJ/00/-/MB01-42020/DL/005					
				Skopje_BoQ Rev.B -					
	FOUND. EMBEDMENTS-SCOPE			SKJ/00/-/MB01-42020/DL/003					
	CHAP / FRAP / T0003			HTCT438266EN A		23.08.2007			
	MECH. INTERFACES DATA			SKJ/00/-/MB01-42020/DL/002					
	CHAP / CHAP / T0046			HTCT324575EN C		29.11.2007			
	SILENCER WITH			SKJ/00/-/MB01-42020/DL/001					
				HTCT01467083 A					
	SPECIFICATION OF GT13E2 E			SKJ/00/-/MB01-42020/DL/004					
	CHAP / FRAP / T0002			HTCT679456EN -		22.08.2007			
42090	Erection Bid Documentation, Erection Documentation, Site Documentation								
DL	List of Documents-List of Documents			SKJ/00/-/MB01-42090/DL/xxx					
	Binder 3 of 4 BoQ Piping			SKJ/00/-/MB01-42090/DL/002					
				BoQ Piping B					
	BoQ Skopje GT13E2-kompl.			SKJ/00/-/MB01-42090/DL/005					
	CHAP / CHAP / T0066			BoQ Skopje GT13E2 -		04.03.2008			
	BoQ-ST-& Generator			SKJ/00/-/MB01-42090/DL/004					
	CHAP / CHAP / T0066			BoQ-ST-Geno -		04.03.2008			
	Skopje BoQ GT13E2- _B			SKJ/00/-/MB01-42090/DL/003					
				Skopje-BoQ B					

- Progress Report in Excel format: in this case it is generated an Excel sheet showing all the information required. See the pictures below showing respectively the Column Selection and an example of the Report.

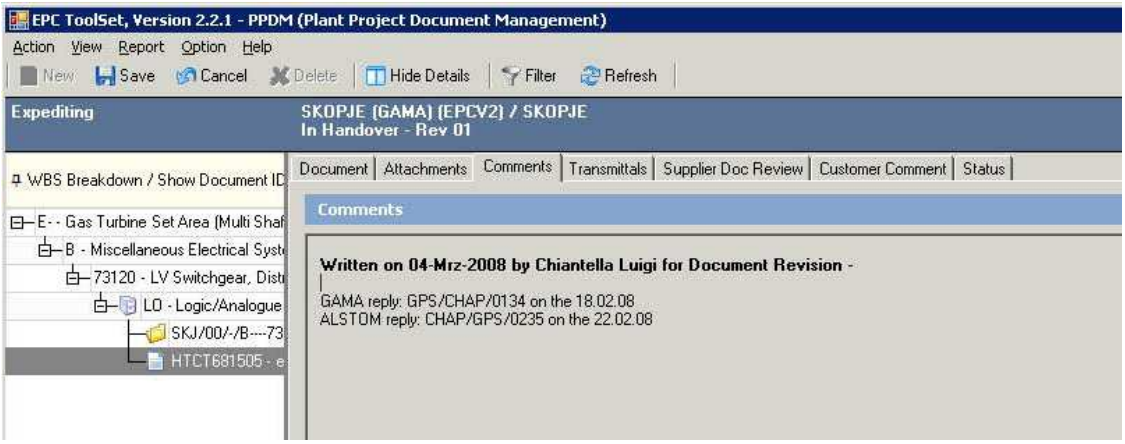


	A	B	C	D	E	F
1	**SKOPJE (GAMA) (EPCV2) / SKOPJE**					
2	Customer MDL - Progress Report					
3	List of Documents to Be Sent to the Customer					
4	List of Documents Sent to the Customer					
5						
6	**Status:05 March 2008**					
7						
8	Filter: Show filled drawers only=False, Channel To=CHAP, Channel From=CHAP, Show only documents with out a file=False,					
9						
10	**Rev.**	**Title**	**Document ID**	**TSlip No.**	**TSlip Date**	**Status**
11		Single Line Electrical Diagram				
12	A	Phase Sequence and Terminal Connections	HTCT221737	CHAP/CHAP/T0012	01-Oct-07	
13	A	Single Line Electrical Diagram	HTCT122952	CHAP/CHAP/T0015	05-Oct-07	
14		Wiring Diagram				
15	-	Electrical Interface Gas Turbine (Alstom scope) - Power	HTCT324817	CHAP/CHAP/T0030	26-Oct-07	
16	-	Electrical Interface Steam Turbine (Alstom scope) -	HTCT324818	CHAP/CHAP/T0030	26-Oct-07	
17		Project Procedure				
18	-	Skopje Project Execution Plan (External)	HTCT681134	CHAP/CHAP/T0006	18. Sep 07	
19		Logic/Analogue Diagram				
20	-	P-FUP GT LV Switchgear	HTCT681505	CHAP/CHAP/T0065	04-Mar-08	
21	-	P-FUP GT LV Switchgear	HTCT681505	CHAP/CHAP/T0067	05-Mar-08	
22		Data Sheet				
23	-	Plant Data sheet for the Alstom Gas Turbine GT13 within the Combined Cycle Power Plant Skopje	HTCT681574	CHAP/CHAP/T0033	05. Nov 07	
24	-	PROJECT SKOPJE, MACEDONIA: COOLING WATER REQUIREMENS FOR GAS TURBINE GENERATOR -& LUBE OIL COOLING SYSTEM; GT13E2	HTCT681526EN	CHAP/CHAP/T0005	14. Sep 07	
25		Input/Output Signals List				
26	A	Input/Output Signals List	HTCT623298	CHAP/CHAP/T0050	07-Dec-07	
27		List of Documents				
28	C	MECH. INTERFACES DATA	HTCT324575EN	CHAP/CHAP/T0046	29. Nov 07	
29		List of Documents				
30		BoQ Skopje GT13E2 kompl	BoQ Skopje GT13E2	CHAP/CHAP/T0066	04 Mar 08	

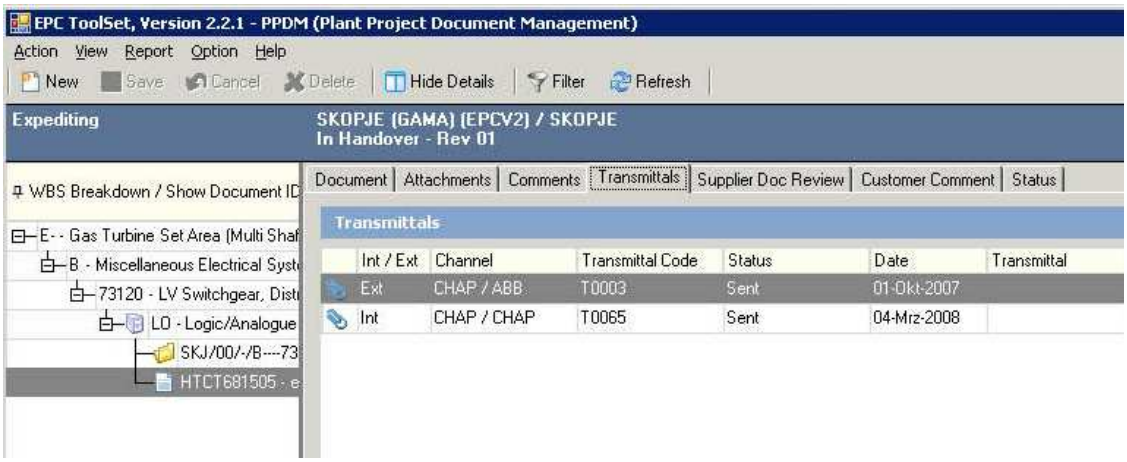
7.1.3. Transmittals in PLANT-PDM

A transmittal in PLANT-PDM maintains indeed all the following information:

- All the information regarding the document: Document ID, AP DOC Code, Title, Responsible, Revision, Date of last revision, Language, and Owner.
- Attachments to the document.
- Comments: it is possible to add comments to the document. These comments will not appear in the document itself and even in the transmittal of the document. These comments will remain in PLANT_PDM systems. See an example in the picture below:



- Transmittal track: PLAN-PDM maintains the track of all the transmittals sent; it maintains the following information: number of the transmittal, the date, the sender and the status. It is also possible to open the transmittal and see all the other desirable information. See an Example in the picture below:



- Status: it is possible to set the status of the document.

7.1.4. Document numbers in PLANT-PDM.

PLANT-PDM documents have at least two and a maximum of three numbers; there is a number called Document ID, a number called ALSTOM Document Code and a number called Customer Document Number. The three numbers are used for different scopes: the first one is the document identification and

normally it is the same for standard documents; it means that in every project the same document has the same Document ID.

The second number is unique for each document and it is composed by the following parts:

GGG / 00 / - / EIS--- / IS / 013

The first three letters are allocated uniquely to every project by the Tender Engineering Manager or the Project Engineering Manager, in coordination with customer if required.

The second two numbers define the unit(s) to which the document applies.

Examples:

00 Overall project, e.g. general layout

01 Unit 1

99 Balance of plant, e.g.

The third letter is a one figure code designating the Participant or Consortium Member responsible for the document, including their subcontractors. For Doc's created PE internally, a hyphen " – " is used.

Examples:

C Customer

E Electrical equipment supplier

M Project leader / Mechanical equipment supplier

The fourth part is composed by a code of ten digits; the first digits carry the relevant system code. The last unused digits of the file code must be replaced by dashes. For documents which apply to a particular topic or equipment which relates to several systems or areas a two figure alpha code may be applied to the last two digits of the file code, either on their own with the first digits replaced by dashes, or in conjunction with a system or building code.

Examples:

UQA-----TR A document relating to cooling water filtration and pumps station earthing

The last three digits of the file code are allocated an alphanumeric code, which is the product package number.

Examples

-------B01 Water cooled condensing plant

-------C30 Atmospheric cooling tower

The fifth area is defined depending on the content and purpose of the document.

Examples:

ES Technical Specification

DO Operation and Control Concept

QC Quality Control Plan

FD P & ID

The last part is a three digit number in order to identify the single document.

For project documents administrated in Plant PDM, the serial number is given automatically by Plant PDM.

The third number is used for document to be sent to customer.

See the matrix below for explanation.

	Example	Printed	Used in communication
Document ID	1AHA057341	On document, if exists	Mandatory, if exists
ALSTOM document code	LNG/00/E/-------- CA/DO/002	On document, if ALSTOM	Mandatory
Customer doc number	6850/9/2.003	Mandatory in documents for customer	Mandatory for documents for customer

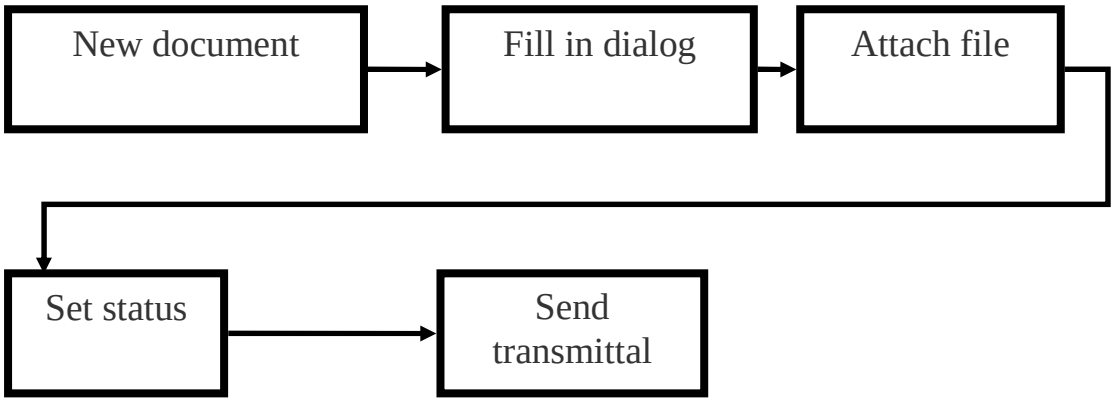
7.1.5. Workflow in PLANT-PDM.

See the blocks diagrams which explains the workflow of documents in PLANT-PDM. The graphs below respectively represent the workflow of:

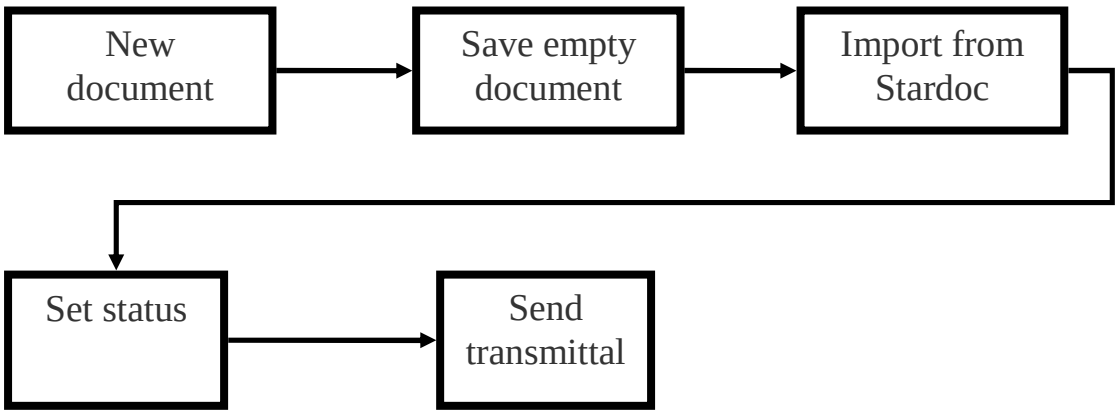
- Documents created externally
- Documents created in ALSTOM

- Document Workflow with External Supplier
- Documents created by supplier
- Transmittal Workflow

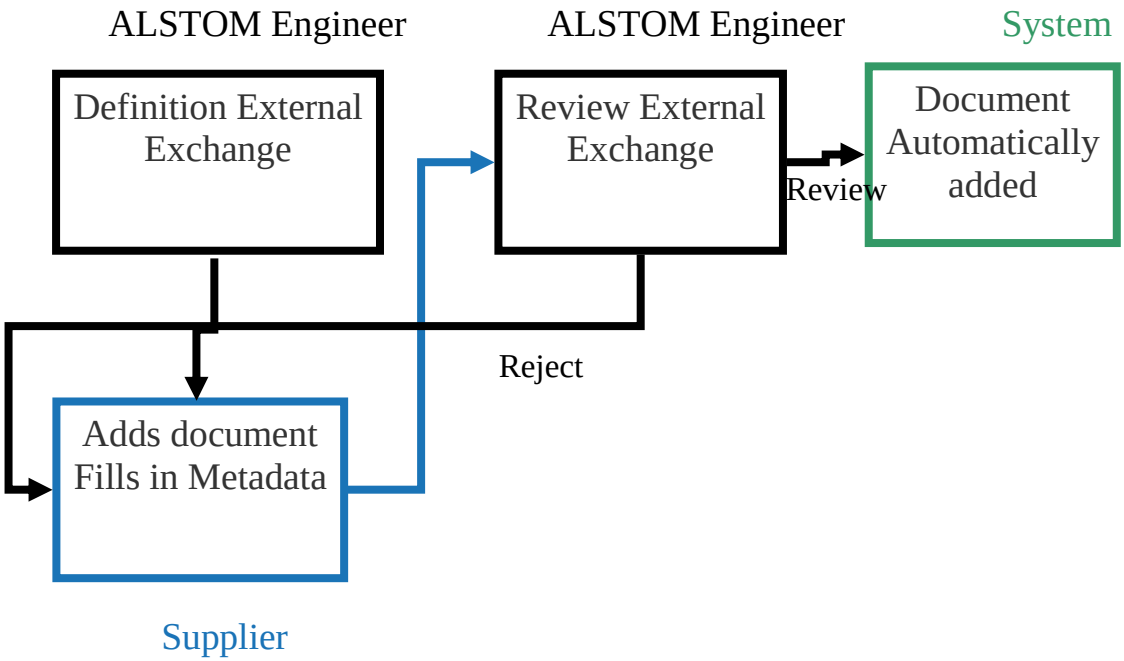
Documents created externally:



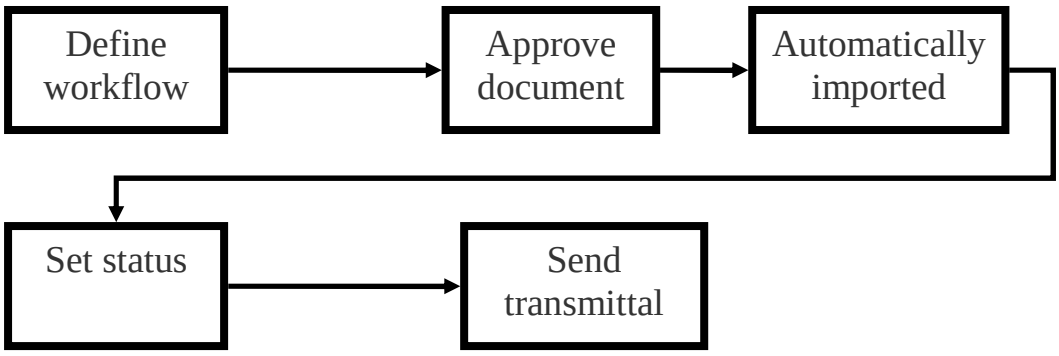
Documents created in ALSTOM:



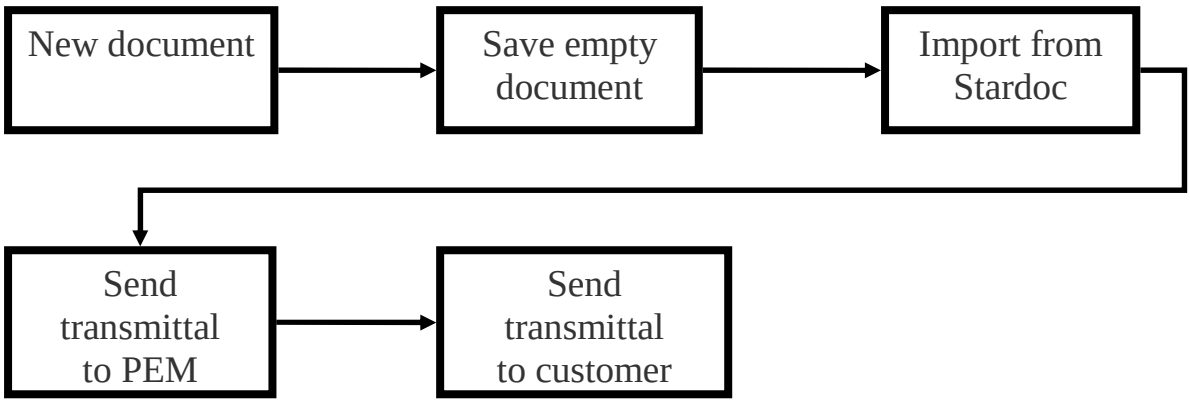
Document Workflow with External Supplier:



Documents created by supplier:



Transmittal Workflow:



7.2. The feasibility study.

I was required to study the possibility of a efficient introduction of PLANT-PDM for the execution of the project. In this regard, I had the training to use the PLANT-PDM and I had to dedicate my time on it.

7.2.1. Problems, solutions and preparation of the feasibility study.

First of all I checked the response of PLANT-PDM functionalities to our communication needs: PLANT-PDM has almost all the functionalities that the documentation workflow and control need.

The main weakness of PLANT-PDM is the impossibility to send comments within the transmittal; a second, but not irrelevant problem, is that the Client and the Partner do not use PLANT-PDM; this means that part of PLANT-PDM functionalities can not be used. In particular, it is not possible to link our Partner or Client reply to the transmittal sent. Third, not all documents of Skopje Project were in PLANT-PDM. See the feasibility study attached for more explanations.

However, I tried to use PLANT-PDM possibilities to overstep the problems sorted in the previous step: I found the possibility to write comments in two position of the transmittal; see the picture below:

Project: SKOPJE (GAMA) (EPCV2) **Project No.:** 8112
Correspond. No.: CHAP/CHAP/T0067

Sender

Location	Dept.	Person	Phone	Date	Signature
		Luigi Chiantella		05-Mrz-08	

Recipients

Location	Dept	Person	Action	Remarks
		Luigi Chiantella	TC	Here it is possible to set the specific action that the receiver as to do with the following document. It wi appear in the trasmittal next to name of the receiver

Legend Action
TC=To be sent to customer

In this space is possible to set a standard message for internal or external trasmittal or a text. Could be used to add comments to the document.

Attachments

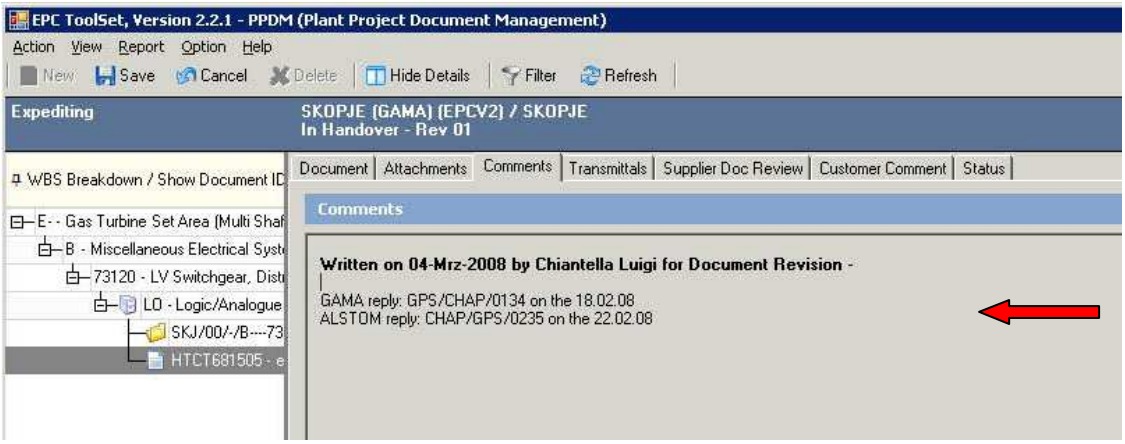
AP Doc Code / Doc ID	Rev	Cust. Doc. No.	Page	Title	Type	Copy	Size	Remarks
SKJ/11/G/BJA-------/LO/505 HTCT681505	-			P-FUP GT LV Switchgear	E			

Legend Type
E=Electronically

Legend Size

= Attachment

To solve the second problem, as in PLANT-PDM there is the possibility to add hidden comments that can be seen just by ALSTOM users, to transmittals and documents, I proposed to manually memorize, adding a hidden comment, the number of ALSTOM partner reply and further the PIRS number of our reply to their question. See the picture below.



For the third problem I prepared a list of the documents, which were not present in PLANT-PDM, to be distributed to the team. The responsible of the missing document should upload it in PLANT-PDM.

7.2.2. Presentation of the feasibility study.

I presented the feasibility study in a meeting with the Project Director, the PEM and all the leading engineers. See the Feasibility Study attached.

The leading engineers and the Project Director had no criticism to the introduction of PLANT-PDM and they agreed with the solutions I had proposed. Some of the leading engineers were already using PLANT-PDM to transmit their documents to the PEM or PD.

The PEM were the only member of the team not convinced of the introduction of PLANT-PDM; he was critic about the slow of the system, the inconvenience of writing comments in the places proposed, the effort we had to do to introduce it and the possibility to have to send the document trough PLANT-PDM and comments through e-mail. In addition, he was not sure of the possibility to abandon the Master Drawing List in Excel format and he did not want to maintain two documentation management systems in the project.

The problem were discussed and, at the end, the decision to introduce PLANT-PDM was taken; the main reasons supporting the use of PLANT-PDM were: the benefits (in time savings and control efficiency) to maintain the documentation control in PLANT-PDM instead of Excel (the time lost to send a transmittal 30% slower than a normal e-mail and 20% slower than a PIRS document were recuperated with the time savings in the maintenance). Other reasons were: the possibility to access all the information in PLANT-PDM by all the team members, the retention by the system of any change made and the necessity in any case, sooner or later, to upload in PLANT-PDM all the documents for the operative turn over (transition from the Project Execution team to the Commissioning team).

The overlap of the two control system was granted for a period of two months to complete the transition without any risk for the project.

7.3. The Claim Management.

What is a Claim? It is a commercial demand in regard of money, schedules or technical or contractual content raised by one party to a contract against another because of variances or difficulties in fulfillment of a contract. The claim

Management are all the actions, procedures and process done to manage the claim. ALSTOM Claim Management Procedure includes a initial part of preparation of Claim Management that consists in the following activities:

- Analyze contract and identify ambiguities
- Issue contract obligations check list (listing of our obligations and evidence of fulfillment).
- Define specific project claim strategy
- Create claims file

In Skopje Project this stage of preparation of Claim Management was not followed; in particular, the contract had been analyzed by the Project Director, the Contract Manager and the PEM but there were no shared files prepared, no obligations check list and no prior strategies defined. The claim was handled after that the problem was raised without previous preparation.

As the project was becoming more complicate and many issues were outstanding the Project Director decided that we need to prepare ourselves to manage the claim.

In this regard, as I was in charge of the project documentation, I had to prepare the Claim files.

7.3.1. Preparation of Claim files.

To support the Claim Management I had to prepare, update and manage the Claim files and I had the responsibility to provide to the claim responsible the right information if required.

The main issue of claim in Skopje Project were:

- Delay of the documentation regarding the condensate pump.
- Delay of HRSG information that impacts the Steam Turbine engineering
- Delay of Cooling water diagram and parameters
- A claim regarding who had to provide the overhead crane (not clearly defined in the contract) to build and maintain the Power Plant.

In PIRS there was the possibility to create claim files: the files were composed by a short description of the claim, all the relevant information as responsible, due date, people involved, references etc.
It was also possible to set the links to all the correspondence and documents relevant for the claim.
Creating this kind of files the claim Management was much more easier for the team: anybody who needed a resume or a particular information about the claim could consult the files and take it. Also all the Risk analyzes on the project could be done directly using the files with saving of time and without the possibility of forgiving relevant information about the claim.

7.4. Conclusion of the fourth stage.

In this last two months of work experience in ALSTOM I had the possibility to understand, learn and use the PLANT-PDM information system. I studied, presented and introduced the usage of PLANT-PDN in Skopje Project to manage and control documentation and I built the "claim files" to help the claim management. The main problem, that I found in introducing PLANT-PDM, was the difficulty to convince people to accept the new system; at the beginning many of them were reluctant to change their way of working. In this regard, I found a strong opposition against PLANT-PDM of a member of the project team that could be overtaken only with the hierarchical authority of the Project Director. It was not easy at the beginning to maintain the overlap of the two system but after a while the team was using PLANT-PDM properly and the documentation workflow was working properly with benefits for the project.

8. Conclusions.

During my six months of working experience as Documentation Manager in ALSTOM I had a great opportunity of work; I saw how it is lead a complicate project, I learned to work in an international team, I understand the difficulty of managing an international group both from a cultural and communicative point of view, I understood and learned the concept of "professionalism on the job" and, in particular, I learned the need and the importance of the right information, in the right moment and in the right place.

From the technical side, working as documentation manager I had the possibility to learn two informative system PIRS and PLANT-PDM and how this kind of systems have to be adapt to the particular project, to the particular situation, to be useful to the team.

I learned the difficulty to cooperate and work with people and I understood how it is difficult to persuade people to change they way of working.

As final result of my work experience I reached the target I was taken for: to build a system to manage and to maintain the documentation and communication control. The team recognized my results and my boss, the Project Director was happy with my job.

When I joined the project there was no central control on communication and on documentation and every member of the project team was maintaining, or not, his own control on his own documentation and correspondence. To remedy to this lack of management and control, I built some Excel sheets to manage and control the documentation and communication workflow, later I restructured the PIRS database, I switched the correspondence control from the Excel system to the PIRS one and, finally, I studied and introduced the PLANT-PDM information system to manage documentation. Since it had no control and centralized management, I introduced two information systems and I made more fluid the control and management of communication and documentation.

My work in ALSTOM was characterized by a continuous improvement of the communication and documentation management; in this regard, my work can be also seen as a process of "Operative Communication Change Management"

because I had to try to change the way of working of the project team to introduce the new systems.

Working as documentation manager and using the information system adopted in ALSTOM made me better understand the real possibilities that an information system can provide to a complicate project in terms of control, workflow management, claim and communication management; however, I understood, also, the limits that this systems have in terms of flexibility: every project has his own particularities and the project team his own requests in terms of information and communication needs; in this regard, the systems do not respond completely to the specific needs and it is necessary, sometimes, to adapt the communication and information requirements to the system.

I believe I had a great opportunity to be integrated in such an interesting project that gave me the possibility to do my first work experience, gave me the possibility to work in international environment, made me learn a lot of and among other things, gave me the opportunity to travel (I have been sent to Dubai or few days), to visit a Power Plant and a Gas and Steam Turbine factory.

9. Attachments.

COMMUNICATION MANAGEMENT PLAN.

1. Purpose

The purpose of this document is to establish a proper communication and correspondence system between ALSTOM Participants, Consortium Members and the Customer and/or the Customer Representative during the Project execution.

2. Scope

The scope of this document is to explain how correspondences and documents should be managed in Skopje Project.

3. Responsibilities

The Project Documentation Manager, Mr Luigi Chiantella, maintains this document.

4. Reference Documents

1. List of documents in reference:

A. EPC Contract
B. JCA
C. Letters GPS/CHAP/0091 defining the communication channels
D. MoM (30.08.2007 Skopje, 10-11.07.2007 Prague, 6-7.11.07 Baden)
E. Procedure from Gama and ALSTOM

2. Databases used in the Project:

A. PIRS
B. Excel
C. PLAN-PDM

5. Terminology, Definitions, Abbreviations

- Correspondence: any written communication, eg, letter, memo , e mail , fax, record of verbal communication or meeting.

- Action List: a list recording all open items, identifying unique reference numbers, originator and responsible.

- Correspondence track: a list recording all receipt and issue of correspondence, identifying unique reference numbers, originator and distributor.

- Document: any record or pictorial information describing, defining, specifying, reporting or certifying activities, procedures or results which is the subject of formal revision control, e.g. record, specification, procedure document, drawing, report, standard, etc.

Note 1 The medium can be paper, magnetic, electronic or optical computer disc, photograph or master sample, or a combination thereof.
Note 2 A set of documents, for example specifications and records, is frequently called "documentation".
Note 3 Some requirements (e.g. the requirement to be readable) relate to all types of documents, however there can be different requirements for specifications (e.g. the requirement to be revision controlled) and records (e.g. the requirement to be retrievable).

- Master Drawing List: a comprehensive list of documents, in which their status and distribution is identified.

- E-Mail: A communication issued via the medium of electronic transfer, whether internal or external to the company.

- Engineering Correspondence or technical correspondence: any written communication, eg, letter, memo, e-mail, fax, or meeting regarding technical issues.

- Plant PDM: Plant Project Document Management is an ALSTOM intranet application for document management.

- PIRS: Project Information Retrieval System is an ALSTOM Lotus Note Application, used to support the project correspondence in the Order Execution Process.

6. Communication Channels

- **Verbal Communication.**

All results of telephone or personal conversation with influence on the project shall be confirmed in writing, distributed to all parties concerned and stored into PIRS Info Control Database.

- **Correspondence**

All incoming and outgoing correspondence has to be recorded in PIRS. The PIRS database numbering shall be used as correspondence identification number.
Internal correspondence distribution can be done with the PIRS action item or by e-mail. The Project Documentation Administrator Luigi Chiantella should be in copy to keep track of the required actions.

6.1 Outgoing correspondence.

All the correspondence between ALSTOM Switzerland and Clients, Partner and Sub-suppliers should be sent through PIRS.

6.1.1 Letter to the Client.

These letters are not sent directly to the Client, but are transmitted to Gama who forwards them to the Client (ref. 3.1.c,d of Correspondence and documentation management procedure of Skopje Project)
First, has to be created a "Project Memo". It has to be created under the folder 2110.15 "Outgoing Customer (TE-TO) Correspondence"

Second, it has to be set the correspondence number; for these letters should be CHAP/TETO/xxxx (the last for numbers are created automatically by Pirs).
Once the project Memo is done, it has to be filled with the following information:

- Diffusion list. To: _ Ivika Sekovanich
  CC: _ Pierre Friez (Always), Dimitry Dmtrienllo

- Subject: Correspondence number (CHAP/TETO/xxxx) + Letter title.
- Text: It should contain the reference and the date of the letter that it answers to, or, additionally, should contain the history.
- If the letter refers to another one stored in PIRS the link "Ref. to Doc. No.:" shall be set to the reference of that letter.

6.1.2 Letter to the Partner.

First, has to be created a "Project Memo". It has to be created under the folder "2110.25 Gama correspondence (Outgoing)" or under "2205.xx PEM". The first folder contains general correspondence; the second contains the PEM correspondence.
Second, has to be set the correspondence number; for these letters should be CHAP/GPS/xxxx (the last for numbers are created automatically by PIRS).
Once the project Memo is done, it has to be filled with the following information:

- Diffusion list. To: _ Sarper Kaptan
  CC: _ Pierre Friez (Always), Hüseyin Ozcan, Sinan Ozcan, Sinan Ozcan

- Subject: Correspondence number (CHAP/GPS/xxxx) + Letter title.
- Text: It should contain the reference and the date of the letter that it answers to, or, additionally, should contain the history. It should have a list of drawings/documents with drawing/documents numbers if preset.
- If the letter refers to another one stored in PIRS the link "Ref. to Doc. No.:" shall be set to the reference of that letter.

6.1.3 Letter to ALSTOM Poland.

First, has to be created a "Project Memo". It has to be created under the folder "2110.44 PM GT Correspondence" if concerns technical correspondence, or under the folder "2110.05 PD External Correspondence" if s PD correspondence.
Second, has to be set the correspondence number; for these letters should be TGN/TSR/xxxx (the last numbers are created automatically by PIRS).
Once the project Memo is done, it has to be filled with the following information:

- Diffusion list. To: _ Slawomir Kopiec
  CC: _ Pierre Friez

- Subject: Correspondence number (TGN/TSR/xxxx) + Letter title.
- Text: It shall contain the reference and the date of letter that it answers to or, additionally, should contain the history. It should have a list of drawings/documents with drawing/documents numbers if preset.
- If the letter refers to another one stored in PIRS the link "Ref. to Doc. No.:" shall be set to the reference of that letter.

6.1.4 Letter from the Consortium to the Client.

ALSTOM is in copy of all the letters sent by Gama to the Client. These letters shall be sent also by fax. There are two types of letter:

- General correspondence is sent through PIRS and is processed under the folder "2110.15 Outgoing Customer (TE-TO) Correspondence" with the correspondence number GPS/TTA/xxxx.
- Engineering correspondence is sent through PIRS and is processed under the folder "2110.15 Outgoing Customer (TE-TO) Correspondence" with the correspondence number GPS/CPE/xxxx.

6.2 Incoming correspondence.

All the incoming correspondence through the formal channel should be received through PIRS or transferred to PIRS and processed.

6.2.1 Letter from the Client.

For the incoming letters from the Client is necessary to do a distinction; ALSTOM receives three types of letters:

- Letters from the Client to Gama; ALSTOM is in copy of all these letters. These letters are not sent through PIRS. They are transferred and processed under the folder: 2110.10 Incoming Customer (TE-TO) Correspondence and it has to be set the correspondence number TETO/GPS/xxxx
- Letters from the Client to us. These letters are not sent trough PIRS. They are transferred and processed under the folder "2110.10 Incoming Customer (TE-TO) Correspondence" it has to be set the correspondence number TETO/CHAP/xxxx
- Letters from Colenco to Gama; we are in copy of all these letters. These letters are sent trough PIRS. They are processed under the folder "2110.10 Incoming Customer (TE-TO) Correspondence" and it has to be set the correspondence number COL/GPS/xxxx

6.2.2 Letter from the Partner.

ALSTOM receives two different types of letter from Gama:

- Engineering letters are not sent through PIRS. The letters are transferred and processed under the folder "2110.20 GAMA Correspondence (Incoming)" with the correspondence number GPS/CHAP/xxxx
- General letters are sent through PIRS. The letters are processed under the folder "2110.20 GAMA Correspondence (Incoming)" with the correspondence number GPS/ALS/xxxx. For this kind of correspondence is set the correspondence control under PIRS. To see how is it done and how to use it check the document: "How to use the correspondence control" attached.

6.2.3 Letter from ALSTOM Poland.

The letters from ALSTOM Poland are sent through PIRS. There is no need to process them and they are stored under the folder "42xx.xx Steam Turbine Engineering design" with the correspondence number TSR/TGN/xxxx.
The letters to be sent to Gama should be sent to ALSTOM TGN ready to be forwarded to Gama to avoid waste of time.

6.3. Internal correspondence.

6.3.1 Technical correspondence.

The technical correspondence can be divided in two types: the first one "document transmittal" and the second one "technical communication".
The documents sent from the leading Engineers to The PEM should be transmitted through Plan-PDM. The technical communication should be done through PIRS in both directions, PEM-Leading engineers, and vice versa. The PIRS Memo should contain the following information:

- Diffusion list. To: _
  CC: _ Pierre Friez (Always)
- Subject: Correspondence number (TGN/TGN/xxxx) + Letter title.
- Text: It should contain the reference and the date of the letter that it answers to, or, additionally, should contain the history.
- If the letter refers to another one stored in PIRS the link "Ref. to Doc. No.:" shall be set to the reference of that letter.

6.3.2. General correspondence

General correspondence can be sent as normal e-mail.

6.4 Subcontractors' Correspondence.

ALSTOM refers with the term "Subcontractor Correspondence" to the correspondence between ALSTOM TSR and H&D. this communication channel was opened since the MoM held in Baden on the 6-7.11.07 with the purpose to speed up the engineering communication process between Gama and ALSTOM. ALSTOM Switzerland is in copy of all the letters sent between the two mentioned parties but at the moment, does not keep track of them. Anyway these letters are sent through PIRS with the correspondence number TSR/H&D/xxxx from ALSTOM TSR to H&D; the letters from H&D to ALSTOM TSR are transferred and processed through PIRS with the correspondence number H&D/TSR/xxxx

7. Correspondence and Actions control.

7.1 Correspondence track

In the Skopje project, ALSTOM keeps track of all the correspondence between Client and GAMA, and GAMA and ALSTOM using Excel files. These Files Can be found at the following link:
O:\TURBOMACHINERY\Project Management TM\Projects_projects_13E2_projects_13E2\Skopje\00-Client\A – Correspondance\ E-mail list GPS-TETO, TETO-GPS.xls
O:\TURBOMACHINERY\Project Management TM\Projects_projects_13E2_projects_13E2\Skopje\00-Client\A – Correspondance\ E-mail list GPS-CHAP, CHAP-GPS.xls

7.2 Action List.

ALSTOM maintains a List of open actions to be revised on the weekly meeting. This List has the purpose to remind what has to be done, by who and for when. The actions are taken from the correspondence between ALSTOM and Gama, or Client, from the correspondence between ALSTOM TGN and ALSTOM TSR, from the internal correspondence, from the MoM or from the weekly meeting. During the weekly meeting the Skopje Project team goes through the action list

and revise what had be done during the week. The action list can be found at the following address:

O:\TURBOMACHINERY\Project Management TM\Projects_projects_13E2_projects_13E2\Skopje\00-Client\06 Action Item List\Open actions.xls

If a Project team member wants to add a open point to be discus on the weekly meeting has to send an e-mail to Luigi Chiantella, explaining the open item, who is in charge and for when is supposed to be done. The open action will be add to the action list and discus in the next meeting.

8. Monthly Progress Report

A Monthly Progress Report has to be submitted by the Consortium to the Client every Month. ALSTOM has to provide his Monthly progress report to Gama who will provide a complete one to the Client.

Internally, team members have to provide their input to Luigi Chiantella who will prepare the monthly Progress Report on the 25th of each month. The PD will revise it.

ALSTOM TSR shall provide is monthly report to ALSTOM TGN in time to be integrate in the Monthly Progress report to be sent to Gama. ALSTOM TSR update schedule shall be provide before the 22sd to be integrate in ALSTOM TGN schedule.

9. What is stored in PIRS

In PIRS are also stored almost all the information regarding the project: the documents produced during the Minutes of Meeting, the documents of the contract and variations to contract, the claim management documents and the financial documents. Ref: Attachment "PIRS Folders Breakdown" 11.2

9.1 Minutes of Meeting Documents.

These documents are stored under the main folder called "Minutes of Meeting" and the number is 2120.

There are different sub folders under the main one where different kind of Minutes of Meeting are stored:

N 2120.00 "Minutes of Meeting (Costumer); in this folder are stored the meeting between Consortium and Owner.

N 2120.05 "Minutes of Meeting (Consortium- Internal); in this folder are stored the not technical Consortium internal meeting.

N 2120.10 "Minutes of Meeting (Project); in this folder are stored Alstom internal meeting.

N 2120.15 "Minutes of Meeting (Technical –ALSTOM / Gama); in this folder are stored the technical Consortium meeting.

N 2120.20 "Minutes of Meeting (Onshore); this folder is not well defined and there are stored different documents regarding meetings.

All the following folders are not used for Skopje Project.

9.2. Contract documents.

These documents are stored under the main folder called "Contracts" and numbered 2130.

Three sub folders are used:

N 2130.00 "Customer Contract"; it contains the EPC contract and the specific correspondence regarding it.

N 2130.01 "Joint Contract Agreement with Gama"; in this folders is stored the JCA with Gama

N 2130.10 "Contract Variation" , in this folder are stored the signed Supplements to the contract.

9.3. Claim Management Documents.

These document are stored under the folder called "Project Claims" and numbered 2135.40

9.4. Planning Documents.

These documents are stored under the main folder called "Planning" and numbered 2140.

N 2140.00 "OTS"; it contains the documents and the correspondence produced and sent by the schedulers regarding the OTS.

N 21400.05 "MTS"; it contains the documents and the correspondence produced and sent by the schedulers regarding the MTS.

9.5. Monthly Progress Report.

These document at the actual state are not stored under the appropriate folder called "Reports" and numbered 2160.

ALSTOM TGN Monthly Progress Reports are stored under the folder N 2110.25 "Gama correspondence (Outgoing)". They should be stored under the folder N 2160.15 "GT Monthly Progress Report"

ALSTOM TSR Monthly Progress Reports are not sent through PIRS and are not stored. They should and will be stored under the folder N 2160.20.

Consortium Monthly Progress Report are stored under the folder 2110.15 "Outgoing Customer (TE-TO) Correspondence" because are considered as outgoing correspondence to the Customer. By the way it shall be decided if they should be stored in the previous folder or in the appropriate folder "N 2160.10 Monthly Progress Report (Customer)".

9.6 Financial Documents.

These documents are stored under the main folder N 2170 "Financial".

N 2170.00 "Invoicing"; it contains all the documents concerning invoices.

N 2170.05 "Insurances"; it contains all documents regarding insurance.

N 2170.10 "Bonds"; it contains all documents on the subject.

N 2170.25 Taxes / Duties; it contains documents on the subject.

The financial correspondence is not stored under the previous main folder but is stored under the folder N 2110.85 "Financial Correspondence".

10. Reminder: where do we store the correspondence

TE-TO e-mails to Consortium.

This correspondence is stored under the communication channel TETO/GPS/xxxx

Consortium e-mails to TE-TO.

This correspondence is stored under the communication channel GPS/TTA/xxxx

Colenco e-mails to Consortium

This correspondence is stored under the communication channel COL/GPS/xxxx

Consortium e-mails to Colenco.

This correspondence is stored under the communication channel GPS/CPE/xxxx.

Gama formals e-mails to ALSTOM.

This correspondence is stored under the communication channel GPS/ALS/xxxx

GAMA engineering e-mails to ALSTOM.

This correspondence is stored under the communication channel GPS/CHAP/xxxx

ALSTOM e-mail to GAMA.

This correspondence is stored under the communication channel CHAP/GPS/xxxx

ALSTOM TSR to ALSTOM TGN.

This correspondence is stored under the communication channel TSR/TGN/xxxx

ALSTOM TSR to H&D

This correspondence is stored under the communication channel TSR/H&D/xxxx

H&D to ALSTOM TSR.

This correspondence is stored under the communication channel H&D/TSR/xxxx

11. Attachments.

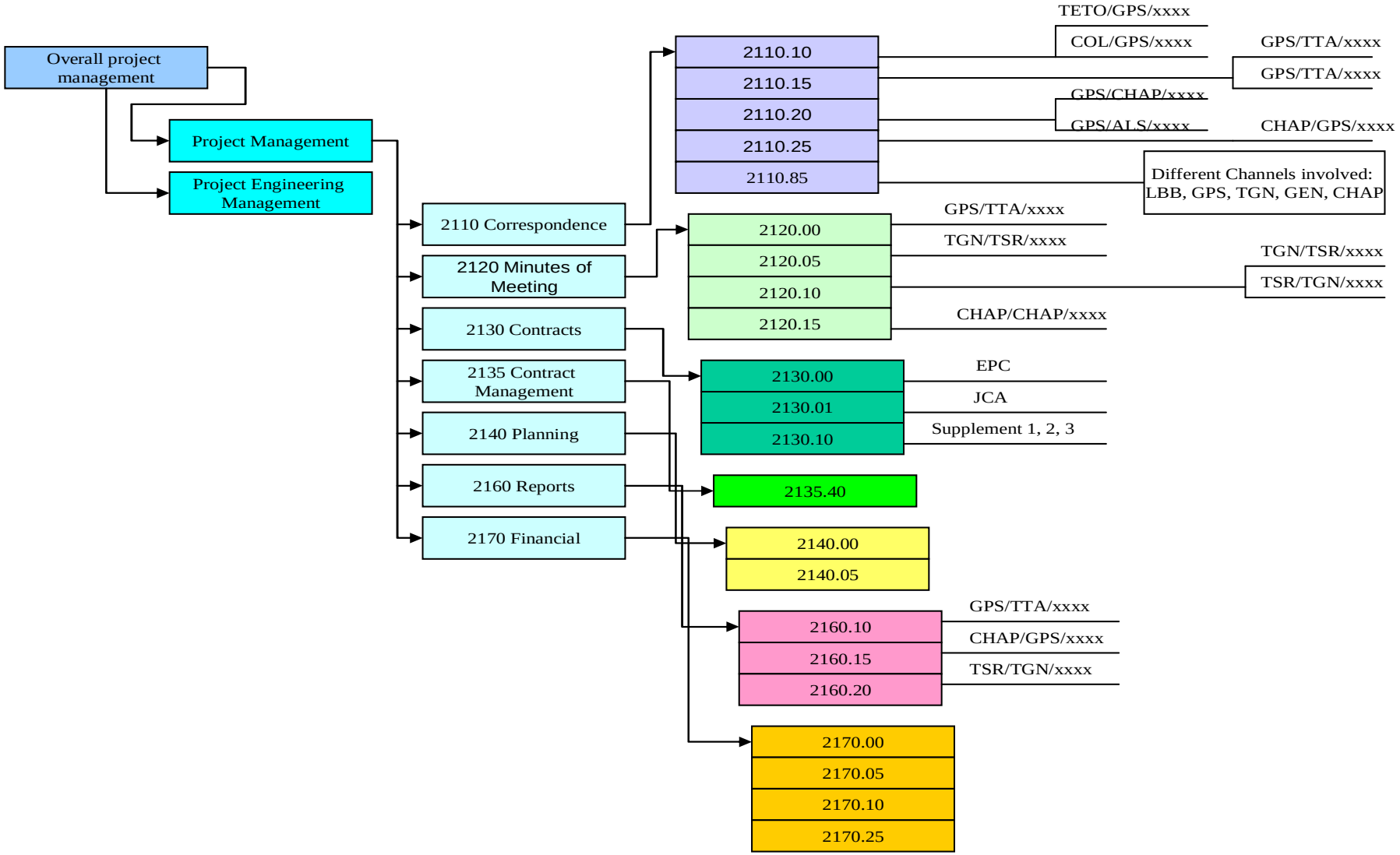
11.1 External Correspondence Copy rules

Parties	Customer Organization			ALSTOM (Switzerland) Ltd.				ALSTOM (Poland)			Gama Organization			Colenco Organization		
Channel	PD			PD	PEM	DOC. ADMIN	Leading Eng.	PM	Leading Eng.		PD	PEM		PD		
CHAP/GPS/xxxx				CS	SC	C	C	C			C	C				
GPS/CHAP/xxxx				C	R						C	S				
GPS/ALS/xxxx				R	C	C					S					
GPS/TTA/xxxx	R			C							S			C		
GPS/CPE/xxxx	C			C							S			R		
TETO/GPS/xxxx	S			C							R			C		
COLT/GPS/xxxxx	C			C							R			S		
TGN/TSR/xxxx				SC	SC	C	C	R	C							
TSR/TGN/xxxx				RC	RC	C	C	S	C							
TSR/HED/xxxx				C	C			S	C		C	C				
HED/TSR/xxxx				C	C			R			C	C				

11.2 internal Correspondence Copy rules

Internal Communication rules and needs										
Main Channels	Mechanical Eng.	Electrical Eng.	Contract. Manager	Control	Logistic	Quality	Procurement	Documentation manager	PD	PEM
MEC/PEM	S, R								C	R, S
ELEC/PEM		S, R							C	R, S
LOG/PD					S, R			C	R, S	
PROC/PEM							S, R	C	C	R, S
PROC/PD							S, R	C	R, S	
CONT/PD				S, R				C	R, S	
DOC/PD								S,R	R, S, C	R,S
CONTR/PD				S, R				C	R, S	C
PD/PEM								C	S, R	R, S

11.2 PIRS folders breakdown



11.3 Communication Channel